ABSTRACT

Title of Dissertation: THE DEVELOPMENT AND TECHNICAL CHARACTERISTICS OF THE MEASURE OF COLLEGE STUDENTS' ORGANIZATIONAL SKILLS

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This purpose of this study was to evaluate the reliability and validity of the Measure of College Students' Organizational Skills (MCSOS), a self-report measure of organization skills of college students. The 60 item measure was administered to a representative sample of 692 freshmen, sophomores, juniors, and seniors from a four-year university, 95 of whom had documented learning disability (LD) and/or attention deficit/hyperactivity disorder (AD/HD). Internal consistency reliability was .9383 for the total scale and ranged from .81 to .87 for the conceptual subscales and from .76 to .92 for the empirical factors. Construct validity was evaluated by factor analysis and differences between the non-disabled and disabled samples. The factor structure was similar but not identical to the conceptual subscales. Group differences were evident between students with and without disabilities, and within disability groups. Overall, the instrument has strong reliability and moderate construct validity. Further work should include confirmatory factor analysis to clarify factor structure.

THE DEVELOPMENT AND TECHNICAL CHARACTERISTICS OF THE MEASURE OF COLLEGE STUDENTS' ORGANIZATIONAL SKILLS

by

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DEDICATION

I would like to thank Heath, my husband, for his love and support throughout this process. He is one in a million and this degree would not have been possible without all of his help. He has been so understanding though this process. He has sacrificed his evening, hot meals, and time to allow me to finish. I want him to know how much I appreciate everything he as done and sacrificed for me.

I would also like to thank my father and mother. Because of their persistence and determination I am here today. When I encountered learning problems as a child, they made sure that every avenue was explored. They taught me to "always do my best" and that is good enough. All the long hours of spelling, studying, and editing papers paid off. I greatly appreciate their sacrifice to ensure that I had every opportunity possible. They went over and beyond to make certain that I had experiences where I excelled and felt good about myself. The numerous hours of babysitting were essential as well. I thank you for all that you have done for me.

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Chapter I

Introduction

For many young adults, college is a time when they encounter numerous personal freedoms and responsibilities. During this time, young adults explore who they are and who they will become. For many students their entire environment has changed – from where and with whom they live, to their schedule and school requirements. Some students may have difficulty handling the organizational challenges that accompany these changes.

This may be especially true for some college students who have learning disabilities (LD) (Brinckerhoff, McGuire, & Shaw, 2002, Perry & Franklin, 2003; Steinberg, 1998; Turk & Campbell, 2002; Willis, Hoben, & Myette, 1995), and/or attention deficit/hyperactivity disorder (AD/HD) (Barkley, 1997a, 1997b, 1998; Byron & Parker, 2002; Lavenstein, 1995). Increasing numbers of students with LD and/or AD/HD are attending universities (Henderson, 2001; Parker, 2002; Parker & Benedit 2002). This increase may be related to three pieces of legislation: the Individuals with Disabilities Education Act (IDEA), Section 504 of the Rehabilitation Act, and the Americans with Disabilities Act (ADA) (American Council on Education, 1995). IDEA may contribute to the increase of college students with disabilities because of better high school preparation in the "Least Restrictive Environment" (LRE). For example, many students with LD and/or AD/HD are now taught numerous skills that may facilitate success in college, such as metacognitive thinking skills, learning strategies, self-determination, social skills, and academic skills in the regular education classroom, to prepare them for college (Eisenman & Tascione, 2002; Hallenbeck 2002, Lancaster, Schumaker, & Deshler, 2002;

Maccini & Hughes 1997; Vaughn, Elbaum, & Boardman, 2001). Therefore, this increase may be due to the fact that these students have prospered in the LRE, which enables them to attain sufficient course work and skills to apply for postsecondary settings. In addition to this, Section 504 and ADA provide further legislation for modifications and accommodations that can be implemented at the postsecondary level, thus striving to allow students with disabilities the same opportunities as students without disabilities. Section 504 and ADA regulations are less detailed with regard to higher education, and serve a broader scope of individuals (Brinckerhoff et al., 2002). Services through these laws are based on reasonable accommodations, not services determined by committee.

Brinckerhoff et al. (2002) reported that over 1,200 college campuses in the United States and Canada now offer services for students with disabilities. Hehir (1998) reported that high school graduation rates of students with disabilities have increased from 67% to 74% and that the number of students with disabilities attending college has tripled. To date, however, there are limited data about the prevalence of LD and/or AD/HD in college students (Brinckerhoff et al.).

LD is a broad term that applies to a heterogeneous group of disorders operationalized by considerable difficulties in achieving and using listening, speaking, reading, writing, reasoning, or mathematical abilities (National Joint Committee on Learning Disabilities, 1997). The HEALTH institute reports that in 2000, 3% of freshmen entering college had a LD (Henderson, 2001). In 2000, two of every five freshmen who reported a disability had a LD when entering college, as compared to 16% in 1988 (Henderson).

Individuals with AD/HD present significant problems with attention, impulsivity, and overactivity (Barkley, 1998). An estimated 1% to 5% of the college population have been reported to have AD/HD (Barkley, 1998; Richard, 1995). During the 1990's, university campuses began to report increasing numbers of students with AD/HD (Parker & Benedict, 2002). Nadeau (1995a) predicted that college students "who need services for ADD are growing in such number that they may soon equal those with learning disabilities" (p. 1). Parker (1998) surveyed 21 public, private, and community colleges and reported an average increase of 52% in the number of students with AD/HD served between 1996 and 1998. Parker and Byron (1998) extended these findings by contacting an additional 26 campuses. They established that the majority surveyed reported a similar trend of Parker's study during the same time period. Ninety-two percent of the campuses reported an increase in students with AD/HD.

While each of these disabilities is distinct and has different symptoms, many researchers suggest overlap. Fletcher, Shaywitiz, and Shaywitiz (1994) reported that between 26% and 80% of individuals with high incidence disabilities also have other high incidence disabilities. Evidence exists of comorbidity of learning disabilities and AD/HD, with percentages ranging from 25% to 50%. Approximately 25% of AD/HD students also have a learning disability, and 33% of students with learning disabilities also have AD/HD (Cutting & Denckla, 2003; Javorsky & Gussin, 1994; Semrud-Clikeman, Biederman, Sprich-Buckminster, Lehman, Faraone, & Norman, 1992). In the current study, LD, AD/HD, and LD+AD/HD will be examined as separate categories of disability.

Organizational Skills

It is often assumed that many people with LD and AD/HD experience difficulty organizing time, materials, assignments, and thoughts. For example, articles in research to practice journals provide insights on how to teach organizational skills to students and to help teachers organize students with LD and/or AD/HD (Haman & Isaacson, 1985; Hildreth, Macke, & Cater, 1995; Jones, Kalivoda, & Higbee, 1997; Mangannelo, 1994; Richard, 1995; Shields & Heron, 1989; Slade, 1986; Stormont-Spurgin, 1997). Instructional methods textbooks on teaching students with academic and behavior problems include organization and time management strategies (Birsh, 1999; Byron & Parker, 2003; Deshler, Ellis, & Lenz, 1996; Mercer & Mercer, 1989; Polloway & Patton, 1997; Schloss, Smith, & Schloss, 1995). In addition, time management and organizational strategies are included in other published materials for teachers and parents (Davis & Sirotowitz, 1996; Dowdy, Patton, Smith, & Polloway, 1998; Hoover & Patton, 1995; Meltzer, Roditi, Haynes, Biddle, Paster, & Taber, 1996; Zionts, 1997). The implication of this emphasis on organization is that (a) students with LD, AD/HD, and LD+AD/HD have organizational problems and (b) improvement of these skills will lead to improvement in academic achievement.

Despite the number of authors who described organizational problems and prescribed instructional approaches for students with AD/HD and/or LD, there are modest references in this work documenting the problems or solutions. There are some indications that difficulties with organizational skills are linked to incomplete daily homework assignments (Gajria & Salend, 1995; Trammel, Schloss, & Alper, 1994). Flores, Schloss, and Alper (1995) found that using a daily calendar to plan and record

events increased the number of responsibilities, homework assignments, and activities completed by students with LD. Sah and Borland (1989) reported that gifted students with LD who exhibited organizational problems improved behavior and achievement with a learning strategy intervention. Dupaul and Stoner (1994) also reported students with AD/HD display difficulties on tasks that require organization. Evidence of problems with organizational skills are also apparent in the writing literature. Students with LD have difficulty in goal setting, idea generation and the organization of ideas (Graham & Harris, 2003) For example, when prompted, fifth and sixth grade students with LD averaged advanced planning time of less than a minute (MacArthur & Graham, 1987). Overall, the empirical basis provides initial evidence substantiating the organizational problems of students with AD/HD and LD.

If it is true that people with AD/HD and/or LD have organizational problems, one population who may have difficulty with organization is college students. Brinckerhoff et al. (2002) report that often college students may view themselves as "unrestrained" (p. 29). This freedom to do what they want may be difficult to manage. This may be especially true for students with AD/HD (Barkley, 1997a, 1997b, 1998; Byron & Parker, 2002; Lavenstein, 1995) and LD (Brinckerhoff, 1994, 1996; Brinckerhoff et al., 2002; Brinckerhoff, Shaw, & McGuire, 1992; Steinberg, 1998) who may have problems self-regulating behavior. The decrease in direct parental or teacher guidance may make it difficult for students to self-regulate behaviors for which parents and teachers may have previously supplied the structure (Barkley, 1990; Brinckerhoff, 1994, 1996; Brinckerhoff et al., 2002; Brinckerhoff, et al. 1992; Dalke & Schmitt, 1987; and Katz, 1998). For example, students might be reminded and asked by parents nightly if they completed

their homework, if they had a project coming up that needed attention, or if they packed what they needed for school the next day. Parents may also have assisted students in completing projects by reminding them of each step that needed to be completed and in what order. Time management can also be influenced by parents. Parents may remind students of how long it takes to complete assignments, as well as convey that no other time is available to finish the assignment even though it is due the following week. Students are not provided this structure in a dorm room with a roommate and may not realize the need to ask themselves the same questions.

In addition to parental support, high school teachers may provide organizational structure by reminding students when projects are due (Barkley, 1990; Brinckerhoff, et al., 2002; Brinckerhoff et al., 1992; Dalke & Schmitt, 1987; Steinberg, 1998, Wiess, 1992). However, in the college setting, this information may commonly be in the course syllabus and may not be mentioned again after the first class. Some high school teachers may also remind students of up-coming tests and review material. This may not occur in college classes. College professors may assign books to be read by the end of the semester, while a high school teacher might assign two chapters weekly (Brinckerhoff et al., 1992). Thus, what teachers expect from an organizational perspective changes dramatically between high school and college.

Brinckerhoff et al. (1992) and Brinckerhoff et al. (2002) stated that quantitative and qualitative differences exist between high school and college environments. First, instructional time is different. The weekly instructional time in the college classroom is normally 12 to 15 hours (less for students with LD and/or AD/HD who have a reduced course load) as compared to 25 to 30 hours in high school (Brinckerhoff 1994, 1996;

Brinckerhoff et al., 1992; Brinckerhoff et al., 2002; Dalke & Schmitt, 1987). Brinckerhoff et al. (1992) and Brinckerhoff et al. (2002) state that this difference implies a greater emphasis on independent reading and study time. DuChossois and Michaels (1994) commented that students with LD may take longer to read assignments. This time investment is often more than that required from their peers without disabilities. Learning is student-focused rather than teacher- focused. Unlike high school, where frequency of teacher feedback on day-to-day homework assignments is greater, college requires long-range homework assignments (term papers, projects, essays) with little guidance (Brinckerhoff, 1994, 1996; Brinckerhoff et al. 2002; Dalke & Schmitt, 1987). College professors also require a higher level of academic performance and proficiency than that accepted in high school (Dalke, 1993; Dalke & Schmitt, 1987; Dexter, 1982).

The college setting focuses on student responsibility; thus student decision making is different than in high school (Brinckerhoff, 1994, 1996; Brinckerhoff et al., 1992; Dalke & Schmitt, 1987). The college environment focuses on its long - established tradition of freedom of choice (DeChossois & Michaels, 1994; Gardner & Jewler, 1988). College students are required to do many activities not required in high school, such as balancing personal freedom with the need to set personal goals, and conducting long term planning in order to complete semester projects (Dalke & Schmitt, 1987; Gardner & Jewler, 1988). Finally, students are required to extract and compile information from many sources (class lectures, readings, texts, and library references) (Gardner & Jewler, 1988). While speculative, the above scenarios are logical based on the change of environment and increased responsibility between high school and college. Qualitative interviews of college students with AD/HD and/or LD conducted by researchers provide

support for the conclusions drawn (Perry & Franklin, 2003; Steinberg, 1998; Turk & Campbell, 2002; Willis, Hoben, & Myette, 1995).

Theoretical Framework

Organization is defined in many ways. Nissenbaum (1999) defined organizational problems as difficulty perceiving and affecting structure in space and time and discrimination of essential components of structure. Other authors are more specific. Deshler, Ellis, and Lenz (1996) described the organizational difficulties of students with LD as: (a) failure to perceive the importance of organization of information, (b) inability to recognize that information can be reorganized into categories, (c) difficulty managing singular tasks in an organized manner, (d) problems comprehending organization in material, and (e) complications managing multiple tasks in an organized manner. Assessment and diagnostic manuals define organization differently. The Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (1994) defines organizational problems of people with ADHD as: (a) difficulty following through and/or finishing a task, (b) systematizing tasks and activities for completion, and (c) keeping items needed for tasks and/or activities. Zentall et al. (1993) defined organization by the following categories: (a) design and manage activities inside a time framework, (b) systematically group objects within space for fast retrieval, and (c) structure an approach to a task. All of the definitions of organization cite time, structure of task completion, and structure of environment. Zentall's (1993) definition of organization covers these basic elements. For the purpose of this study, I desired a definition that included these essential components. Therefore, I began with Zentall's definition of organization. Upon review, I required a clearer demarcation between planning and managing than in the Zentall (1993) definition. Thus, these constructs were separated into (a) planning a task and (b)

managing an activity. Zentall's construct of "structure" was included with "planning." For the purpose of this study, organization is defined as (a) ability to structure and plan a task, (b) manage activities within a time framework, and (c) systematically arrange objects and assignments within physical space for rapid retrieval. Further examination of the literature indicated that self-regulation theory was compatible with the view of organization being developed. Thus, a fourth criterion, self-reflection, was added. The final definition is a composite of several ideas, common themes in the definitions of organization and self-regulation theory.

Self-Regulation

A way of understanding organization is through self-regulation theory. After reviewing the literature, it became apparent that organization or lack of organization could be explained by self-regulation. This link is critical because self-regulation skills are correlates, if not causal factors, in achievement (Butler, 1994, 1995, 1998a, 1998b; Graham & Harris, 1989; Sawyer, Graham, & Harris, 1992; Schumaker & Deshler, 1992; Miller, Miller, Wheeler, & Selinger, 1989; Olympis, Sheridan, Jenson, & Andrews, 1994, Trammell, Schloss, & Alper, 1994; Wong, Butler, Ficzere, & Kuperis, 1996).

Thus, attention to organizational skills through attention to self-regulation skills may have implications for the achievement of college students with AD/HD and/or LD. For example, VanZile-Tamsen and Livingston (1999) found that lower-achieving college students reported fewer self-regulated behaviors and less strategy use than high-achieving college students. Zimmerman and Martinez-Pons (1986, 1988) demonstrated that high-achieving students at the high school level who were self-regulated learners engaged in time management activities. Zimmerman (1998, 2000), Zimmerman and Martinez-Pons (1988), and Pintrich (2000) reported that improvement in self-regulation

increased academic achievement. It is likely that organizational behaviors are one of the outward manifestation of self-regulation.

Self-regulation is the ability to "self-generate thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals" (Zimmerman, 2000, p. 14). Zimmerman noted that, "perhaps our most important quality as humans is our capability to self-regulate" (p. 13). Many variations of self-regulation theory exist. However, Zimmerman (1989) stated that a common thread across the theories is the "belief that students' perceptions of themselves as learners and their use of various processes to regulate their behavior are critical factors in the analysis of academic achievement" (p. 1). Self-regulation theory provides an explanation of how students control their own learning and development cognitively, motivationally, and behaviorally. There are several basic assumptions about student learning in self-regulation learning theory. First, a person is an active and creative part of the learning environment (Pintrich, 2000; Zimmerman, 1989). Second, learners can control and regulate certain features of the environment through the use of metacognitive and motivational strategies (Pintrich, 2000; Zimmerman, 1989). Third, learners set a standard (goal) to which present progress is compared to determine if change is necessary (Pintrich, 2000; Zimmerman, 1989). The final theoretical assumption is that self-regulatory activities are directly linked to achievement and performance outcomes (Pintrich, 2000; Zimmerman, 1989).

Theoretical variations. At least six different variations of self-regulation theory exist. These theoretical perspectives include behavioral, Vygotskian, Piagetian, Neo-Piagetian, information processing, and social cognitive (Bronson, 2000). These theories will be discussed in relation to the development of cognitive processing. The behavioral

theory states that cognitive processing can be shaped through models, rules, verbal prompts, reinforcements, and punishments. Operant conditioning shapes internal and external behavior (Bronson, 2000). In the Vygotskian view, language and culture are the central elements of self-regulation. Inner speech is the principal vehicle that mediates thought (Vygotsky, 1962, 1978). The Piagetian theory of self-regulation explains processing by naturally adapting to the environment. This is done through organizing experiences and adaptive thinking, thus increasing cognitive development (Piaget, 1967). The Neo-Piagetian theory supports Piaget's belief that knowledge is actively constructed through stages. However, this theory adds concepts from information-processing theory that focus on domain-specific development (Case, 1985; Fisher 1980). For example, changes in knowledge tend to happen in general stages due to the fact that an individual's information-processing capability changes with age (Case, 1986; Fisher 1980). Information processing theory seeks to explain cognitive processing though explaining how information flows and is processed by an executive functioning system.

The most pertinent theory for this investigation is the social cognitive perspective because of its breadth. Social cognitive self-regulation theory integrates behavior, cognition, and environment, which includes cognitive, metacognitive, social, and motivational skills. Also, self-regulation is viewed as an interaction between personal, behavioral, and environmental behaviors (Bandura, 1986; Zimmerman, 2000). To be more specific, this theory of self-regulation involves not only the behavioral skill of self-management of environmental possibilities, but also the knowledge and personal sense of self to enact certain skills in relevant situations. The social cognitive definition of self-regulation is presented in terms of actions, one's personal motives, and beliefs. This differs from definitions that focus on specific ability, trait, or stage. This difference may

account for why a person can regulate one type of performance but not another. This view is more expansive than other models of self-regulation because it does not emphasize only knowledge and deductive reasoning (Zimmerman, 2000). Social cognitive self-regulation theory was selected to guide the current study because it incorporates many dimensions such as the student, behavior, and the environment, not just behavior. Social cognitive self-regulation theory is also typically invoked in special education literature. So social cognitive self-regulation theory may be especially relevant to understanding the performance of students with LD and/or AD/HD.

Conceptual framework. Self-regulatory processes and beliefs are demonstrated in three categories or cyclical phases: forethought, performance, and self-reflection (Zimmerman, 1998, 2000; Figure 1). Figure 1 represents the three phases and recursive nature of self-regulation and some of the behaviors exhibited in these phases. These behaviors parallel those required for organization as defined in this study. These behaviors are designated in red in Figure 1 to demonstrate the similarities in self-regulation and organizational skills.

The first phase, forethought, involves task analysis and self-motivational beliefs (Zimmerman, 1998, 2000). Task analysis includes goal setting and strategic planning, while self-motivational beliefs are composed of self-efficacy, goal orientation, outcome expectations, and intrinsic motivation. This phase includes many behaviors that directly apply to organization, such as goal setting, time and effort planning, and planning for self-observation of behaviors. Pintrich (2000) specifically describes time and effort planning as making schedules for studying and assigning time for activities. Part of this planning also includes decision-making about allocation and monitoring of effort and

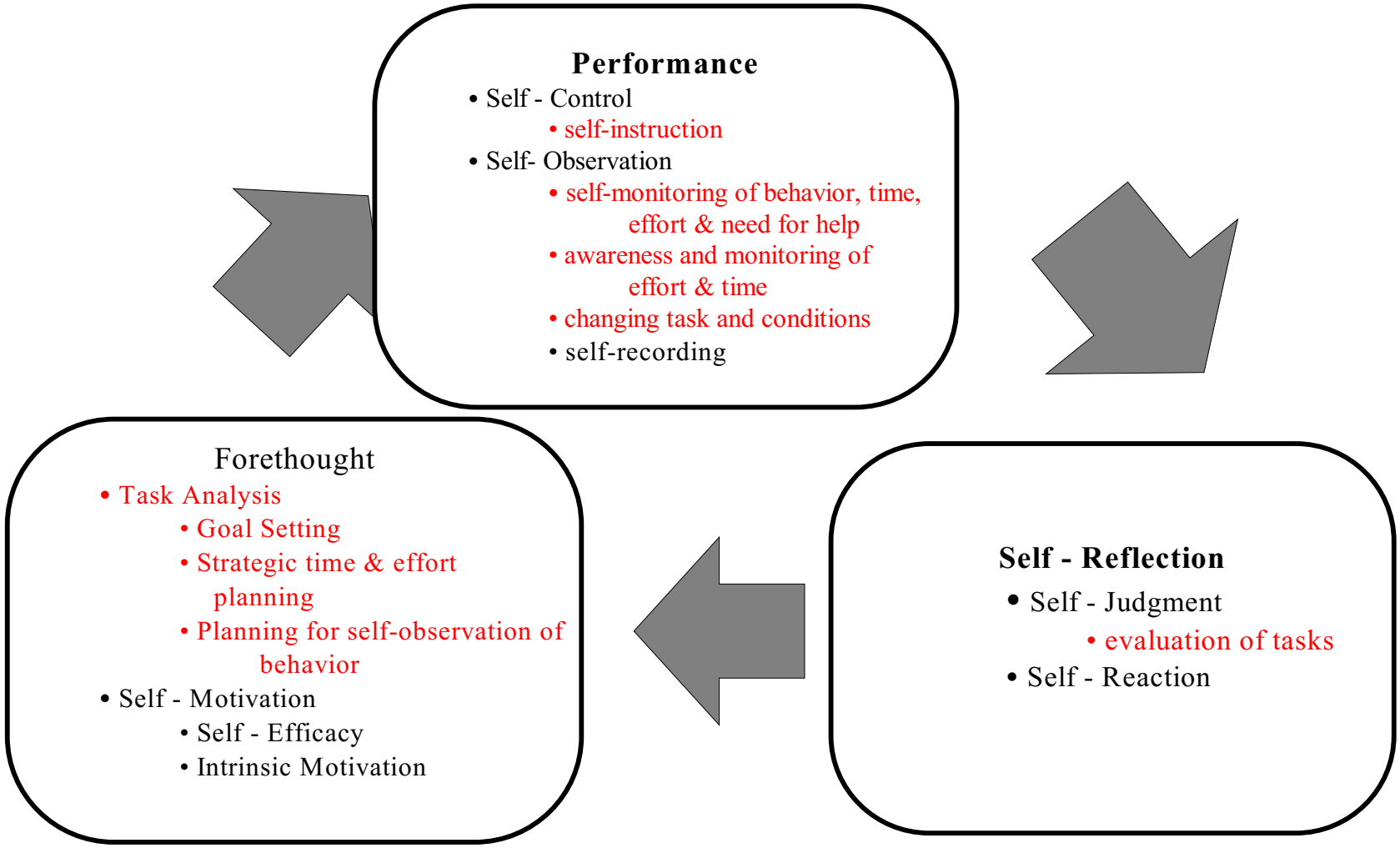
Performance
• Self - Control
• self-instruction
• Self- Observation
• self-monitoring of behavior, time, effort & need for help
• awareness and monitoring of effort & time
• changing task and conditions
• self-recording
Self - Reflection
• Self - Judgment
• evaluation of tasks
• Self - Reaction
Forethought
• Task Analysis
• Goal Setting
• Strategic time & effort planning
• Planning for self-observation of behavior
• Self - Motivation
• Self - Efficacy
• Intrinsic Motivation

Figure 1. Cyclical phases of self-regulation modified to include characteristics and behaviors. From: Zimmerman, B. J. (1989). Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research, and practice*, (p. 1 - 25). New York, NY: Springer-Verlag.

work intensity (Pintrich). Planning and organization must also be involved in self-monitoring behaviors (e.g., schedules, graphs) (Pintrich).

The second phase is performance, which includes self-control and self-observation. Self- control involves using processes such as attention, self-instruction, and task strategies to concentrate and optimize effort. Self-observation is the ability of persons to track "specific aspects of their own performance, the conditions that surround it, and the effects that it produces" (Pintrich, 2000, p. 19). Behaviors included in this phase that apply to organization are self-instruction and self-monitoring or recording. Self-monitoring and awareness of behavior can provide information that can be used in planning other activities and behavioral control (Pintrich).

The third phase is self-reflection, which involves self-judgment and self-reaction (Zimmerman, 1998, 2000). Self-judgment includes self-evaluation of performance, while self-reaction involves perceptions of satisfaction with performance and conclusions about how to alter strategies for performance if needed. Evaluation of performance of tasks is a behavior in this phase that applies to organization. The ability to determine if actions were successful in achieving a goal is important because of the relationship to the forethought phase in the model.

Self-regulation, LD & AD/HD

Zimmerman (2000) stated that dysfunction in self-regulation is associated with the presence of LD. Problems in concentration, recall, reading, and writing are thought to have neurological origins leading to self-regulation problems (Borkowski & Thorpe, 1994). Students with LD set lower academic standards, have trouble containing impulses, and are less precise when estimating academic skills (Borkowski & Thorpe, 1994).

Swanson (1990) reported that students with LD have difficulties with monitoring, checking, and revising their activities. Swanson further reported that students with LD are less likely to employ or develop effective learning strategies.

Individuals with AD/HD also exhibit difficulties with self-regulation. Barkley (1997a, 1997b, 1998) explained that although multiple etiologies may lead to AD/HD, the majority of evidence targets neurological and genetic factors as the greatest contributors to this disorder. The majority of researchers have reached conclusions that abnormalities in the development of the frontal-striatal regions of the brain probably underlie the development of AD/HD (Arnsten, Steere, & Hunt, 1996; Barkley, 1997b, 1998; Benton, 1991, Gualtieri & Hicks, 1985; Mattes, 1980; Mercugliano, 1995; Pontius, 1973; Tannock, 1998). It is believed that the frontal-striatal region of the brain deals with behavioral inhibition (Barkley, 1997a, 1997b, 1998). Barkley (1998) stated that a shift in AD/HD research theory has begun within the last decade to recognize deficits in behavioral inhibition. Behavioral inhibition may be the most distinguishing characteristic of the AD/HD from other disorders, such as mental and developmental disorders (Barkley, 1997b; Pennington & Ozonoff, 1996; Schachar, Tannock, & Logan, 1993). This behavioral inhibition was associated with a significant disruption of the development of normal self-regulation (Barkley, 1997a, 1997b, 1998; Lavenstein, 1995). Research is beginning to show that the "developmental delay in inhibition gives rise to deficits in the executive functions that subserve self-regulation" (p. I, Barkley, 1998). Therefore, it is likely that students with AD/HD have difficulties with self-regulation (Barkley, 1997b, 1998; Cutting & Denckla, 2003), and hence with organization.

Students with LD and/or AD/HD may experience difficulty with self-regulation

due to problems in any of the stages depicted in Figure 1. These problems do not disappear with age. There is evidence that adults with LD do not become self-regulated learners (Schneider & Pressley, 1989; Schunk & Zimmerman, 1994a). Bursuck and Jayanthi (1993) and Deshler, Schumaker, Alley, Warner, and Clark (1982) stated that students with learning disabilities continue to exhibit strategic deficiencies into adulthood. Hofer, Yu, and Pintrich (1998) discussed the need to teach management and organization of time. This apparent difficulty in self-regulation can lead to difficulties with organization of tasks, time, and concepts. Many aspects of my definition of organization are mirrored in self-regulation theory. The forethought, planning, and activation stages involve the behaviors of task analysis and goal setting. Pintrich (2000) also places importance on planning and scheduling of time and tasks, as well as monitoring. Since students with AD/HD and LD may experience problems with self-regulation, it is logical to suspect that these difficulties may affect their organizational skills.

Research Questions

Although the preceding discussion is suggestive of the possibility that students with LD and/or AD/HD have difficulties with self-regulation and organization, and it is likely that college students would be so affected, there is limited evidence to document organizational difficulties. An initial step in the study of possible organizational problems in college students with LD and/or AD/HD is the development of a suitable instrument. The purpose of this study was to evaluate the reliability and validity of the Measure of College Students' Organizational Skills (MCSOS) by (a) assessing the internal consistency reliability of the MCSOS total scale and subscales, (b) assessing the

MCSOS test-retest reliability, ©) assessing construct validity through factor analysis, and (d) evaluating construct validity by comparing responses of normally achieving students and students with LD and/or AD/HD. The research questions were: (1) Are the MCSOS total test and subscales internally consistent? (2) Are the MCSOS total and subscales scores stable? (3) Are the conceptual factor structure and empirical factor structure similar? (4) Do group differences exist on the MCSOS between normally achieving students, students with LD, students with LD+AD/HD, and students with AD/HD? It was expected that students without documented disabilities would obtain higher organization scores than students with disabilities.

Significance

The potential contributions of this study are threefold: (a) providing a technically adequate instrument that may assess organization difficulties, (b) providing initial evidence of the extent of organizational difficulties among college students, and ©) providing a basis for future intervention research. First, at this time, a reliable and valid measure to evaluate organizational skill is not available. Such an instrument may be useful to teachers, researchers, and university personnel. Such an instrument may be useful to teachers, researchers, and university personnel interested in intervention, and screening / identification of organization problems at the college level. Second, initial evidence via examination of construct validity on the organization skills of college students with and without disabilities will be provided. At this time, it is unclear if organizational skills distinguish between students with LD and/or AD/HD and students without disabilities. If this turns out to be the case, then further examination of instrument validity would be warranted. For example, construct validity research could

be explored by (a) developing and implementing interventions with students who earn low scores and (b) determining linkages between improvement in organizational skills and academic achievement.

Definition of Terms

Learning disabilities. LD has several definitions. However, a consensus definition was provided by the National Joint Committee on Learning Disabilities (NJCLD, 1997). The conceptual definition is as follows:

> Learning disabilities is a general term that refers to a heterogeneous group of disorders manifested by significant difficulties in the acquisition and use of listening, speaking, reading, writing, reasoning, or mathematical abilities. These disorders are intrinsic to the individual, are presumed to be due to central nervous symptom dysfunction, and may occur across the life span. Problems in self-regulatory behaviors, social perception, and social interaction may exist with learning disabilities but do not by themselves constitute a learning disability. Although a learning disability may occur concomitantly with other disabilities (for example, sensory impairment, mental retardation, or serious emotional disturbance) or with extrinsic influences (such as cultural differences or insufficient/inappropriate instruction), it would not be a result of those conditions or influences. (NJCLD, 1997, p. 29.)

For the purpose of this study, LD will be operationalized by adherence to criteria established by the participating university's Office for Disability Accommodations (ODA). Students must first supply current (within three years) documentation of their disability in a diagnostic report. The report must include a diagnostic interview, an

assessment of aptitude, a measure of academic achievement, and a measure of information processing conducted by a qualified professional. Only certain measures of aptitude and achievement that are judged reliable and valid are accepted by the ODA office (Appendix A). Actual test scores from standardized instruments must be provided, and a fifteen point discrepancy between aptitude and achievement must be reported as well.

Attention Deficit / Hyperactivity Disorder. Barkley (1998) reported that AD/HD was a diagnostic label for individuals presenting significant problems with attention, impulsivity, and overactiveness. More specifically, the Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) (1994) defines the essential feature of AD/HD as "A persistent pattern of inattention and/or hyperactivity-impulsivity that is more frequent and severe than is typically observed in individuals at comparable levels of development" (p. 78). The DSM-IV (1994) identifies three sub-types. The first and most common type is considered a combined type and is identified as individuals having at least six symptoms of both inattention and hyperactivity-impulsivity. The second type, predominantly inattentive type, included individuals experiencing at least six symptoms of inattention, but fewer than six symptoms of hyperactivity-impulsivity. The third type, predominantly hyperactive impulsive type, has at least six symptoms of hyperactivity-impulsivity but fewer than six symptoms of inattention. Clinicians must demonstrate history of impairment, identify current areas of functional impairment in two or more settings, and determine that other psychiatric disorders are not the cause of symptoms. AD/HD is identified as one disorder under the current DSM-IV diagnosis. The current terminology used in the DSM-IV, which is AD/HD will be used in this study. However,

previous acronyms such as ADD and ADHD have been used in the prior literature. In the literature review, the acronyms used by the original researcher will be reported.

For the purpose of this study, students will be classified as AD/HD if they meet the participating university's ODA criteria. The criteria are (a) current (within three years) documentation of the disability; (b) a diagnostic report that includes a diagnostic interview, statement of early impairment, evidence ruling out alternative diagnosis, relevant neuropsychological or psychoeducational assessment information, identification of current and retrospective symptoms that meet DSM-IV (1994) criteria for AD/HD; (c) statements of how patterns of inattentiveness, impulsivity, and/or hyperactivity are being used to determine AD/HD; (d) indication if medication was in use during the time of the evaluation; (e) how AD/HD affects the student in the academic situation; and (f) a specific diagnosis of AD/HD. All subtypes of AD/HD will be considered as one type of disability for the purpose of this study.

Organization. For the purpose of this study, "organization" is defined as ability to (a) structure and plan a task, (b) manage activities within a time framework, (c) systematically arrange objects and assignments within physical space for rapid retrieval, and (d) self - reflect. The operational definition is defined by scores on the MCSOS.

Chapter II

Literature Review

Search Procedures

The search for research articles for this review included several steps. First, the search was limited to published journal articles and dissertations. Second, a systematic search through three computerized databases was conducted that included Education Resources Information Center (ERIC), Psychological Abstracts, Dissertation Abstracts, and Exceptional Child Education Resources. The following descriptors were used: organization, study skills, time management, time estimation, organize, planning, self-monitoring, self-regulation, self-identification, self-determination, college, post-secondary, adult, disabilities, learning disabilities, mildly handicapped, learning handicapped, learning problems, attention deficit disorder, attention deficit hyperactivity disorder, behavior problems, academically handicapped, and special education. Next, I discussed this topic with faculty members who provided the names of Lynn Meltzer, Paul Pintrich, Robert Stodden, and Stan Shaw, whose work might be pertinent to this study. An additional search was conducted using ERIC based on these authors' names.

Following the computerized database searches, a manual search of the latest issues (1998-2003) of the relevant professional journals was conducted. Journals included in the hand search included: *Exceptional Children, Focus on Exceptional Children, Intervention in School and Clinic, Journal of Educational Psychology, Journal of Learning Disabilities, Journal of Special Education, Learning Disabilities Research and Practice, Learning Disabilities Quarterly, and Teaching Exceptional Children*. Next, an ancestral search through the references of the articles obtained was conducted, with

seven additional articles acquired. Finally, I searched the University of Maryland's catalog, Victor, and the catalog of a University in the Southeastern United States, to locate textbooks about LD, AD/HD, and organizational problems for additional information.

In general, the studies identified measured time estimation, planning skills, and self-regulation of students with and without disabilities, and children who were average or poor achievers. Most of the available literature is based on school-age children, not college students. However, this database provides some sense of the problems college students with AD/HD and LD may face, so it is reviewed. The studies are reviewed based on the following categories: time estimation, organization, self-monitoring interventions, characteristics/settings of colleges students with LD and/or AD/HD, and measures.

Time estimation includes studies related to how students with disabilities evaluate and plan the usage of time. The next section will include literature on the evaluation of organizational skills. Self-monitoring will evaluate the studies related to self-regulation and the relationship to organization. The college section will review the limited available evidence on college students; college students with LD, LD+AD/HD, AD/HD; and organization. The final section will evaluate measures used to assess organizational skills.

Review of Literature

Studies were reviewed based on Isaac and Michael's (1997) recommendations for good design, Wilkinson and the APA (American Psychological Association) task force on statistical inference (1999) paper on statistical methods in psychology journals, and the methodological analysis by Mamlin, Harris and Case (2001) in the area of LD. This

review included the main areas of theoretical framework, rationale for conducting the study, adequate description of participants' characteristics, adequate description of sample selection, operationally defined independent and dependent variables, complete description of reliability and validity of measurement instruments, sufficient description of procedures, and appropriate data analysis.

The literature was also reviewed in relation to the definition of organization used in this study reflects the ability to (a) structure and plan a task, (b) manage activities within a time framework, (c) systematically arrange objects and assignments within physical space for rapid retrieval, and (d) engage in self-reflection. However, the available literature does not fall into these categories. The literature review confirmed that very little specific empirical evidence was available regarding the organizational abilities of college students with LD and/or AD/HD. This may be due to several factors. Until recently, it was believed that individuals with AD/HD outgrew their symptoms after childhood; therefore, characteristics in adults with AD/HD were not studied (Barkley, 1998). Knowledge of the effects of AD/HD in adults is limited. Students with LD are a different situation. It is commonly accepted that LD is a lifelong disability. However, within the last decade, universities have begun to see an increase in the number of students with LD attending college. This may be a direct result of IDEA and/or ADA. Research is available regarding LD and the college student, but it is limited. Even though research is limited at the college level, other pertinent aspects of research were discovered. The literature on the time estimation of students with LD and/or AD/HD is available and growing. Studies evaluating different measures of time and organization were found. The research does not capture all the aspects or evidence of organization as

used in this investigation. Instead, the literature could be best organized by time estimation in general organizational skills, self-regulation , skills of college students, and measures.

Time Estimation

Time is a key aspect of organization; therefore, time is reflected in the definition of organization. Self-regulation theory identifies general behaviors that consider time and the planning of time (see Figure 1). Therefore, it would be essential to consider time with respect to students with LD and/or AD/HD. There are several reports that students with learning, attention, and emotional problems exhibit problems in estimating time (Barkley, Koplowitz, Anderson, & McMurray, 1997; Bruno, Johnson, & Simon, 1988; Burd, Dodd, & Fisher, 1984; Capella, Gentile, & Juliano, 1977; Dodd, Griswold, Smith, & Burd, 1985; Dooling-Litfin, 1997; Forer & Keogh, 1971; Nelson, Smith, Dodd, Gilbert; 1991; Senior, Towne, & Hussy, 1979). These studies were reviewed to determine if students with LD and/or AD/HD exhibit problems with time estimation.

A total of 12 time estimation studies were identified; 8 of these studies did not meet minimal methodological criteria (i.e., limited sample size, lack of control group, limited description of disability, controlling for family-wise error) which significantly limited interpretation. These studies will be reviewed briefly to provide a sense of the findings. Forer and Keogh (1971) found that 23 second - and 22 fifth - grade boys with LD experienced less mastery of perceptual and cognitive aspects of time than normally achieving students based on the Time Understanding Inventory. Bruno et al. (1988) were interested in the ability of students with LD to estimate time. The researchers matched groups of students with and without LD based on IQ and achievement scores. Bruno et

al. discovered that eight middle school students with LD differed significantly from eight students without LD when estimating 15- second time intervals. Burd et al. (1984) determined that 72 fourth-, fifth-, and sixth- grade students with LD experienced difficulties in time estimation when compared to 266 peers without disabilities.

It is also apparent that samples with AD/HD as well as students with emotional disabilities experience difficulty with the estimation of time. Francis (1988) determined that 34 elementary students with emotional disabilities, when compared to 351 peers without disabilities, experience difficulties in time estimation as measured by the Function Time Estimation Scale (FTES). Nelson et al. (1991) had similar findings with 32 male middle school students with emotional disabilities. The researchers were able to differentiate between disability based on time estimation ability. Cappella et al.(1977) compared the ability of 112 elementary, middle, and high school students with and without hyperactivity to estimate time intervals. The researchers found that students with hyperactivity significantly differed from those without hyperactivity. Students with hyperactivity estimated elapsed time intervals as larger. However, Senior et al. (1979), in an effort to replicate the finding of Cappella et al., investigated the time estimation abilities of three groups of males between the ages of 7 and 16. The sample included 135 normally achieving students, 6 students with hyperactivity, and 6 students with mental retardation (MR). Students with hyperactivity were significantly different from normally achieving peers; however, they underestimated the time interval, a finding that is opposite of what Cappella et al. reported.

Dodd et al. (1985) conducted a two-part study to determine if children with LD differed from peers on time estimation tasks. Time estimation was targeted because the

authors found little empirical support for the frequently cited relationship between poor temporal skills and LD. Temporal organization is a broad term including telling time and the perception, estimation, orientation, and organization of time. In the first portion of the study, reliability and validity of an instrument were assessed to measure estimation of time. The second study extended the validity analysis of the instrument. In study 1, 1079 students in first through sixth grades were administered a 58 - item instrument that required students to choose the best estimate of the quantity of time required for various activities, situations, and experiences. The number of items of the FTES was reduced to 38 based on item analysis and correlations with age. Reliability, assessed with Cronbach's coefficient alpha, was .88. Construct validity was examined with factor analysis. Three factors were obtained: general time estimation, short-term time estimation, and school holiday intervals. General time estimation accounted for 74% of the variance, while short-term time estimation accounted for 13% and school holiday intervals accounted for 7%. To establish construct validity, the composite time score was regressed on age. This yielded a moderate correlation of .66 between the composite time score and age, thus revealing that as age increases, time estimation increases.

In study 2, validity of the FTES was further examined by determining if 86 students with LD obtained lower scores than 22 students without LD. Researchers compared the time duration estimates of students with LD to elementary school students without LD. Graduate students administered the FTES to participants. FTES scores were regressed on age to calculate slopes and intercepts for each group. Correlations and slopes between students with and without LD were compared. FTES composite scores were regressed on age, yielding identical slopes but different intercepts when the two

groups were compared. This means that students with LD score lower at each age. No differences between males and females were found. Children with LD experienced time orientation difficulty. Regardless of group membership or gender, age was strongly and linearly related to the FTES total scale score. The researchers found some evidence that the FTES was reliable and valid.

Barkley et al. (1997) conducted a study to evaluate the ability of 32 children (age ranging from 8 to 11) with AD/HD to estimate time and organize behavior in relationship to time compared to 32 same- age children without AD/HD. The researchers used a researcher developed questionnaire to survey parents about their child's ability to organize behavior within a time framework and their sense of time. Substantial differences were noted between students with AD/HD and normal students. Dooling-Liftin (1997) replicated this study with 16 children with AD/HD and 14 children without AD/HD confirming Barkley et al's (1997) findings.

Barkley et al. (1997), in a preliminary study, asked children to reproduce time intervals. The participants (32 AD/HD and 32 normal-achieving children, ages ranging from 8 to 11) were presented with a sample duration time interval; however, the student was not told the length. The researcher would ring a bell, wait the duration, and then ring the bell again. The student was then asked to demonstrate the length of the interval by using a flashlight to signal the beginning and end of the interval. First, students were asked to produce 6- and 10- second intervals with no distractions, then 10- to 16- second intervals were presented with distractions. Children with AD/HD made significantly larger reproduction errors than students without AD/HD on the 6- to 10- second trial estimations and on the 10- to 16- second trials with distractions. Larger errors were made

by both groups as the time interval was increased. In the second phase of the study, 12 students with AD/HD were compared to 26 students without disabilities. Students were asked to produce intervals of 12, 24, 36, 48, and 60 seconds. Distractions were presented on half the trials. Children with AD/HD made greater errors of time reproduction than the control group, thus indicating that students with AD/HD are less accurate in their time estimation ability. Dooling-Litfin (1997) replicated the second phase of the study with 16 children with AD/HD and 14 children without AD/HD students with similar results. However the Dooling-Litfin sample did not consistency make greater or less time errors as did Barkley et al's sample.

In the final study assessing time, Bruno (1995) assessed time allocation, not time estimation, with 500 at-risk high school students. The study included both qualitative and quantitative components. The researcher measured teacher-identified at-risk students in relation to normally achieving middle and high school students on time utilization. Over 500 high school students were given a self-report survey measuring time allocation preferences for specific activities. Time preferences between outer-, other-, inner-, and non-directed time-consuming tasks were evaluated. At-risk students reported higher time allocations for non-directed activities such as watching television and "hanging out" than normally achieving students. At-risk students also reported lower time allocation for time-consuming activities such as studying and homework than did the comparison group. Bruno (1995) reported that the factors that contributed unique variance to non-directed time allocation were gender, teacher classification of "at-risk," and percent of outer-directed time allocations.

In summary, time is a major aspect of organization; therefore, it would be essential to consider if students with LD and/or AD/HD differed with respect to time estimation. In the above literature, it is apparent that differences do indeed exist. Overall, the literature showed that time estimation increases with age, and that students with LD and/or AD/HD had lower time estimation skills than students without LD. In summary, children with learning, attention, and emotional problems exhibit problems in estimating and allocation of time.

Organization

The review of literature revealed specific studies that examined organization. Portions of two of these studies evaluated aspects of time, but not time estimation, as discussed above. Zentall et al. (1993) investigated the organizational problems of students with AD/HD in the elementary general education classroom. Organization was targeted because the authors found little empirical support in the literature for deficits in organization, even though there was anecdotal evidence to support the existence of organizational problems. The study explored whether organizational deficits could be documented in children with AD/HD across sources (parents and children) using a measure of both object organization and time. Identifying organization problems in students with AD/HD could lead to intervention, and hopefully, to better academic achievement in the regular education classroom.

Thirty-eight elementary school students ages 6 to 14 were placed into two groups, 19 students with AD/HD and 19 students without AD/HD. The researchers developed two measures of organization and time: Child Organization Scale (COS) and the Child Organization Parent Perception Scale (COPPS). Questions were generated from

literature, clinical experience, and professionals in the field. Each measure contained two categories of items. The first category concerned placement of inanimate objects. The second category was organization of time. Questions were answered on a five point Likert scale. COS was completed by children, while both parents completed the COPPS. Significant differences between students with and without AD/HD, favoring the non-AD/HD students, were found on both the object and time sections of the COS. Significant group differences were also found on the time section of the COPPS completed by mothers. Results for the object section were marginal ($p < .115$). Significant group differences were found on the time scale portion of the COPPS completed by fathers of students with AD/HD. The researchers documented discriminate construct validity for the COS and COPPS. The researchers found that children with hyperactivity were aware that they lacked the ability to organize various aspects of their life, established few routines, and could not find items on a regular basis.

Grskovic et al. (1995) conducted a two-part study to determine if students between the ages of 8 and 14 with mild disabilities, including attention and emotional difficulties, experienced organizational problems when IQ differences were controlled. The authors noted that a significant body of research found that students with learning problems exhibited problems in estimating time (Burd et al., 1984; Capella et al., 1977; Dodd et al, 1985, Forer & Keogh, 1971; Hayes, Hynd, & Wisenbaker, 1986; Nelson et al., 1991; Senior et al., 1979; White, Barratt, & Adams, 1979); however, few studies controlled IQ. The second portion of the study measured the predictive validity of a measure of time estimation skills. Study one compared the time estimations of 6 students with LD, 7 children with emotional handicaps (EH), 20 children with ADHD, and 6

students with ED and ADHD to12 peers without disabilities in the elementary school setting, controlling for IQ. An adapted version of the Functional Time Estimation questionnaire (A-FTEQ) and the COS were administered to the students. Teachers were given the Child Organization Scale - Teacher version (COS-T). Significant differences were reported between the comparison group and the LD and ADHD+EH groups. However, when IQ was controlled no significant differences were found. The authors, when assessing the validity of the adapted time estimation questionnaire, found that one item on the COS-T correlated highly with the A-FTEQ: students who had higher A-FTEQ scores were rated by teachers as planning ahead. Curiously, the authors did not provide descriptive statistics for the IQ measure, nor did they report the measure of intelligence used. The authors suggested that IQ is a causal factor of organizational problems. However, this evidence is correlational, not causal.

Studies also have been conducted with poor achievers. Kops and Belmont (1985) were interested in the lack of metacognitive and executive function skills of poor-achieving students based on literature and teacher observation. The hypothesis of the study was that some failing students tend to be inefficient planners and organizers, while children who do perform adequately in school are more effective planners and organizers. The planning and organizational ability of 20 low-average students and 20 normally achieving second-grade students were compared. Children were matched on age, IQ, sex and SES. Students were assigned to low or average achievement groups based on teacher ratings and scores on a reading measure. Kops and Belmont (1985) selected planning and organizational tasks that were complicated to permit varied student behavior. The tasks were chosen to determine if experiencing failure may itself destroy

motivation and impact the organization of students. Equally manageable tasks were chosen for each group, thus eliminating the possibility that differences are related to skill and ability. Low-achieving children demonstrated fewer organizational skills on the experimental tasks than average-achieving peers. On the maze measure, different results were found. Low-achieving children completed the mazes quicker, showed fewer delays, and showed fewer pauses in pencil movement than average achievers; however, the scores were not higher. These results indicate that lower achieving students might not deliberate upon the next move, compared with average achievers. Overall, the findings may be due to difficulty in organizing cognitive skills.

Overall, in the studies reviewed, students with learning problems had difficulty with organizational skills and time estimation. Again, however, due to the methodological issues (i.e. statistical problems, lack of sample definition, deficiency to control for family wise error), the results should be viewed with caution. In conclusion, students with LD or AD/HD and low- achieving students have may difficulty with organization when compared to normally-achieving students.

Self-Monitoring Interventions

Self-monitoring consists of instructing a student to observe and record their own action (Schloss, Smith, & Schloss, 1995) and occurs during the performance stage of self-regulation. Reviews of the literature indicate many advantages of self-monitoring strategies for students with LD and AD/HD (Harchik, Sherman, & Sheldon, 1992; McDougal, 1998; Reid, 1996). These reviewers concluded that individuals may be taught to self-monitor attention or behavior in situations where naturally occurring contingencies to alter behavior are improbable (Harchick et al, 1992; McDougal, 1998;

Reid, 1996). Further, self-monitoring can increase or decrease an individual's behavior without constant, direct supervision (Harchick et al, 1992; McDougal, 1998; Reid, 1996). Several intervention studies with adolescents and college students suggest that self-monitoring procedures increase organization and completion of homework and assignments.

Trammel, Schloss, and Alper (1994) used a multiple baseline design across participants to assess the use of a self-monitoring strategy to increase the number of homework assignments completed by secondary students with learning disabilities. The settings were a regular and special education classroom. The self-monitoring strategy was taught for three weeks and included self-recording, evaluation, and graphing of homework assignments completed. General education teachers collected data on whether the students had met the homework requirement for that day and reported it to the resource teacher. Self-monitoring through goal setting and graphing enhanced the homework completion of secondary students with learning disabilities by 80 percent over baseline.

Clees (1995) used a multiple baseline with reversal design across participants to assess the effects of self-recording of teachers' expectancies on the performance of three adolescent students with learning disabilities and one adolescent student with AD/HD. The setting was a regular education classroom. Teacher expectancies were generated by asking each teacher what behaviors they would like students to exhibit in the classroom. The teachers' responses were then combined into a single list of six expectancies. The expectancies included: begins class on-time, brings necessary materials to class, turns in completed homework, completes all class work, and writes down homework assignments

in assignment notebook. The self-recording strategy included the teacher introducing each student to the schedule and expectancies. The strategy was a form of self-recording on a student calendar if expectancies were fulfilled. Teacher expectancies were shortened to three word sentences. The strategy was taught by modeling, orally saying steps, recording answers, and mentally reviewing the steps for one week or mastery. Data were collected by the general education teachers on whether the students had met the expectancies for that day for two months. The data were used to obtain the percentage of expectancies met. Self-recording expectancies in a daily schedule planner increased teacher expected behaviors by 66 percent over baseline.

Flores et al. (1995) investigated the use of a daily calendar. They employed a multiple baseline across participants to increase responsibilities fulfilled by eight secondary students with special needs. Three of the participants were diagnosed as having mild to moderate mental retardation, and the remaining five students were diagnosed with severe learning disabilities. The settings were a special education classroom and a vocational job site. The students were taught to carry their daily calendar, record activities needing to be completed, and use the calendar to accomplish responsibilities. The strategy was taught through modeling and discussion for 40 consecutive school days. Data were collected by the researcher by communicating with the general education teachers, employers, and job coach about how many individual obligations were met. The data were used to obtain the percentage of responsibilities met. The results of this study showed that using a daily calendar to record events increased the number of responsibilities met by each student by 88 percent over baseline**.**

Hughes, Ruhl, Schumaker, and Deshler (2002) used a multiple baseline design across nine middle school participants to assess the use of an independent assignment strategy to increase the number and quality of homework assignments completed by students with learning disabilities. One student was subsequently dropped from the study because she planned to drop out of school. The strategy was taught in the special education classroom, and mastery was evaluated through practice tasks. The strategy was taught for four weeks and included: prepare forms, record, organize, engage in work, and check your work. The data collected on the participants evaluated the individual's use of the strategy to complete assignments and work outside the special education classroom in the real world setting. General education teachers collected data on assignment completion, quality of assignments, and quarterly grades. General education teachers were also asked to complete a questionnaire on each student's overall assignment completion before and after the study. The strategy increased homework completion by 27 percent over baseline across students. The quality of assignments improved 26 percent over baseline. Quarterly grades at baseline were a mean GPA of 1.7 and increased to 2.6. Teachers reported that five of the eight students increased organizational ability over the course of the study. Overall, the use of self-monitoring techniques to increased organization and completion of homework assignments in adolescent students.

Martin, Mithaug, Cos, Peterson, Van Dycke, and Cash (2003) explored the use of self-determination contacts with eight students from 9 to 10 years of age with severe emotional/behavioral problems to control plans, work, self-evaluation, and academic task adjustments. The intervention strategy was implemented by the special education teacher in the self-contained classroom in three phases that lasted for a month. First, the contract

strategy was introduced. Next, a reward was given when the student completed the daily contract. Finally, the teacher explained in detail how to use and complete the contract. Each student completed daily contracts to schedule their progress on academic tasks, work goals, evaluation and adjusting for the next day's activities. The researcher used rubrics to evaluate each student's daily contract for progress on the project goals. The Woodcock Johnson III (WJ-III) was administered before strategy instruction and after to evaluate academic gains. Significant differences were found between plan and work, work and evaluation, evaluation and adjustment, and adjustment and next day plan. Significant academic improvements were found in the areas of reading, math, language, and knowledge on the WJ-III.

Epstein, Willis, Conners, and Johnson (2001) conducted a reversal single-subject design across settings to explore the effects of a prompting device on the ability of one fourth-grade student with AD/HD inattentive type to complete daily tasks. The prompting device was a wordline pager with alphanumeric display with vibrating capability. The pager provided prompts from a computer program, RxMinder. Each evening the student and parent would use the computer program to set the time and prompts to be sent to the student the next day. When the prompts were programmed into the computer, the computer would send the prompt to a messaging service, which in turn would relay it to the student. A maximum of ten prompts were sent in a day's time (school and home). Prompts included statements such as: eat breakfast, take medicine, turn in homework, and get books ready. The student took a printed copy of the prompts to the teacher at school who monitored completion of daily tasks. The researchers found that the use of a prompting device increased the completion of daily tasks at school by 47%. However, the

prompting device did not affect overall AD/HD characteristics (such as attention) nor tasks completed in the home environment (such as eat breakfast). A prompting tool may be effective for addressing memory-associated AD/HD symptoms in a structured environment.

In summary, researchers in all six studies reviewed reported positive results for self-regulation interventions. Some studies included participants with disabilities. Self-monitoring learning strategies caused increased organization, metacognitive knowledge about learning strategies, and completion of homework assignments.

College Students

Information in this section focuses on several issues: characteristics of students with LD and/or AD/HD in the postsecondary setting, and the influences of comorbidity, self-identification, and interventions in the college setting. When reviewing this information, the reader needs to be mindful of the fact that AD/HD literature is just developing in the area of college and self-regulation, due to the reasons listed above. Even though research is limited in this area, pertinent aspects of research were discovered. Natural history of the disorder, characteristics of students with LD and/or AD/HD in the college setting, self-identification, comorbidity, and interventions used in the postsecondary setting will be discussed in the following section.

Natural History of LD and/or AD/HD. Students with LD and/or AD/HD are diagnosed in all stages of life, although the majority of students are identified in the elementary school setting when academic demands are introduced (Lerner, 2003). These students receive services in the public schools under Section 504 and IDEA. Many of these students continue to experience difficulties in academics, oftentimes exacerbated by

the onset of puberty (Lerner).When these students transition to the secondary setting, Section 504 and IDEA continue to provide services. This transition in service is relativity seamless. Students are reevaluated every three years to determine eligibility though IDEA throughout their school years (Lerner). At this point, students with disabilities may choose to further their education, or enter the workforce. Adults with LD indicate that their major needs are: "social relationships and skills, career counseling, development of self-esteem and confidence, overcoming dependence, survival skills, vocational training, job procurement and retention, reading, spelling, management of personal finances, and organizational skills" (Lerner, p. 316).

Some of these individuals choose to continue their education into the post-secondary setting; however, this transition, although anticipated by IDEA, is not always seamless. Students in this setting are served under Section 504 and ADA. Over 1,300 identified colleges in the United States and Canada offer programs for individuals with disabilities (Kravets & Wax, 1999). However, each of these universities could have a different set of criteria for the definition of LD and/or AD/HD (Brinckerhoff et al, 2002). Many times, these criteria are more strict and specific than those in IDEA (Brinckerhoff et al.). Students in this setting also have to self-identify to the university disabilities office to receive these services. Students with LD and/or AD/HD often times continue to experience difficulties throughout their lives. As these continue to successfully advance, services are available to help these students in different seasons of their life (Lerner).

Characteristics. There is a small but growing literature on college students with LD. The LD literature has several different foci :(a) requirements and guidelines to select a college program (Mangrun & Strichart, 1984; Brinckerhoff et al., 2002); (b) ability of

colleges to supply suitable services/accommodations (Gajar, Murphy, & Hunt, 1982; Mull, Sitlington, & Alper, 2001; Rose, 1991); (c) the efficiency of explicit interventions such as notetaking and teaching methods (Hart & Speece, 1998; Suristsky & Hughes, 1991); (d) characteristics of students with LD (Gajar, 1989; Greenbaum, Graham, & Scales, 1995; Hughes & Smith, 1990; Morris & Leuenberger, 1990; Saracoglu, Minden, & Wilchesky, 1989; Vogel & Adelman, 1990, 1992; Vogel, 1996); (e) the perception of students with LD on requirements for college (Javorsky, Sparks, & Ganschow, 1992) and (f) faculty and student attitudes concerning accommodations and modifications (Houck, Asselin, Troutman, & Arrington, 1992; Matthew, Anderson, & Skolnick, 1987; Vogel, Leyser, Wyland, & Brulle, 1999).

Literature on college students with AD/HD is not as plentiful. This may be due to the fact that until recently, it was assumed that a majority of children with AD/HD would outgrow the disorder during adolescence (Conners, Erhardt, Epstein, Parker, Sitarenious, & Sparrow, 1999). However, it is obvious that AD/HD symptoms do not decrease with the onset of puberty. Just within the last five or six years, research has begun to document the characteristics of this disability into adulthood. In fact, 50 to 80 percent of adults continued to experience significant AD/HD symptoms and impairment that affect their lives (Barkley, 1990).

Barkley (1997b, 1998) cautioned that the majority of knowledge reported about college students and adults with AD/HD at this time is based on clinical impressions, anecdotes, and extrapolation from the children's literature. The literature and research located focused on: (a) assessment (Brinckerhoff, 1998; Javorsky, & Gussin 1994; Jones, Kalivoda, & Higbee, 1997; Nadeau, 1995b; Parker & Benedict, 2002); (b)

accommodations/modifications for service providers (Boluski & Gobbo, 1999; Javorsky & Gussin 1994; Lathama, 1995; Jones, Kalivoda, & Higbee, 1997; Nadeau, 1995a; Parker & Benedict, 2002; Parker & Bryon, 1998, Richard, 1995), and (c) qualitative descriptive research (Perry & Franklin, 2003; Steinber, 1998; Turk & Campbell, 2002; Willis, Hoben, & Myette, 1995).

College students with AD/HD and/or LD may present unique problems. Dalke and Schmitt (1987) express that the guidance, structure, and support of the controlled high school environment may hinder transition to the college environment. Students with LD and AD/HD often lack good study practices and exhibit deficits in basic academic skills (Barkley, 1998; Gajar, 1989; Hughes & Smith, 1990; Mangrum & Strichart, 1988; Perry & Franklin, 2003; Saracoglu, Minden, & Wilchesky, 1989; Steinber, 1998; Turk & Campbell, 2002; Vogel, 1986; Willis, Hoben, & Myette, 1995).

Turk and Campbell (2002) conducted a qualitative study on a nineteen year-old gifted college student diagnosed with AD/HD. The interview was conducted to identify the struggles that he encountered in the academic setting. Academic problems in preschool, elementary, junior high, high school, and college were discussed. Doug struggled through school, "sliding by," compensating for his disability by using his intelligence. However, when Doug entered college, he began to experience serious problems. Doug reported that the postsecondary setting presented many obstacles he had not encountered previously. He conveyed that excessive freedom, increased work load, and limited support contributed to his almost leaving the college setting. Doug reported that he and a teacher have developed an "academic recovery plan" that he has begun to implement. This plan includes a change in living arrangements, assistance from the

disability support service on his campus, the use of a palm pilot to keep appointments, assistance from a peer coach, checking in with the coach, keeping in contact with teachers, and asking for help when it is merited. The most important element to his plan is implementing structure and routine into his college setting (Turk & Campbell, 2002).

Steinberg (1998) conducted a qualitative study in which seven college students with LD and/or AD/HD completed an essay describing their disability. The essays were analyzed for common themes. A major issue described by students was academic frustration. Students re-entering or transferring from another college describe problems with the limited structure of the postsecondary environment (e.g., help from teachers, parents). However, the researcher found that organization and time management were among the weakest skills reported by students. Steinberg's findings were supported by a qualitative study conducted by Willis, Hoben, and Myette (1995).

Willis, Hoben, and Myette (1995) explored the challenges students with AD/HD and/or LD face when leaving home to attend college. Students were interviewed to determine the impact of social, psychological, and academic support provided by family, teachers, and environment. One student with AD/HD and four students with AD/HD and LD were interviewed by the researchers. Six recurring personal issues emerged from the interviews: self-esteem, resistance/acceptance of disability diagnosis, stress, family/peer support, additional disabilities, and organizational skills. All five students reported poor organizational skills affecting areas such as writing, planning, task analysis, and study. Students said that these issues influenced their environmental setting and their academic performance.

A similar study was conducted by Troiano (2003), who investigated the challenges met by students with LD in the college setting. The researcher began by interviewing nine individuals with LD. Each participant was interviewed three times. First, the researcher developed a core category of thoughts, feelings, and actions the researcher termed self-style. Self-style was determined by the individual's definition, orientation, condition, and impact of the learning disability. The author pointed out that each individual's situation is different based on the individual's circumstances and situation. However, several emerging themes that affected the disability or self-style were discovered. Time of diagnosis, personality, individual's perceived support, and level of stigmatization were important influences on self-style. In addition, consequences of the self-style were identified as willingness to disclose, ability to self-advocate, and level of self-determination. These themes were directly influenced by the individual's self- style. The author hoped that this model could be used in understanding and treating students with LD.

Hughes and Smith (1990) conducted a meta-analysis of literature pertaining to the cognitive and academic performance of college students with LD. First, the authors reported that the intellectual functioning of students with LD is comparable to that of students without LD. However, the academic performance of students with LD is more variable. Second, college students with LD do not read as well as their peers without disabilities. The greatest difficulties were with comprehension and reading rate. Thus, the high volume of reading that is required in college places students with LD at a disadvantage. Finally, students with LD experience difficulty with both basic math computational skills and abstract mathematical subjects (algebra and geometry).

College students with LD continue to experience academic difficulty in post-secondary settings. Because the requirements of the college environment differ from these of the high school setting, it is likely that they may also experience organizational difficulties. In summary, the literature reports that students with LD and/or AD/HD report problems with organizational skills. The use of organizational skills and time management, as reported, are key in the problems exhibited or applicable solutions found to compensate for their disability.

Self-identification. In addition to academic problems, students with AD/HD and/or LD in the post-secondary setting are required to self-identify to the university disability support office in order to receive accommodations. Logically, there are many reasons students may be reluctant to self-identify: (a) concern about discovery of their disability by others, (b) independence due to the fact that they are away from home for the first time and feel they do not need help, (c) rejection from others because of a disability, and (d) concern about the opinions of faculty and staff once they learn of the disability. Cowen (1993) observed that students with disabilities who are bound for college must go through the same process as their peers, and that students with disabilities may face additional obstacles. Many students with AD/HD and/or LD do not understand the nature of their disability; as a result, they are unable to explain their disability and needs to others (Eaton, 1996; Field, 1996; Goldhammer & Brinckerhoff, 1992). In addition, these students may also have problems understanding how their disability affects learning in the postsecondary setting (Eaton, 1996; Field, 1996; Goldhammer & Brinckerhoff, 1992, Skinner, 1998). Further research on this issue is

limited. Very little is known about how students with LD and/or AD/HD who self-identify compare with students who do not self-identify.

Comorbidity. Difficulties encountered with either LD or AD/HD are compounded by a dual diagnosis (Aaron, Joshi, Palmer, Smith & Kirby, 2002). There is strong evidence of the coexistence of these disabilities. Fletcher, Shaywitiz, and Shaywitiz (1994) reported that between 26% and 80% of individuals with disabilities also have other disabilities. Evidence exists of comorbidity of learning disabilities and AD/HD. Percentages from 25% to 50% are found in the current literature. Approximately 25% of AD/HD students also have a learning disability, and 33% of students with learning disabilities also have AD/HD (Javorsky & Gussin, 1994; Semrud-Clikeman, Biederman, Sprich-Buckminster, Lehman, Faraone, & Norman, 1992). Decker, McIntosh, Kelly, Nicholls, and Dean (2001) confirmed a significant overlap in the diagnosis of AD/HD and LD. Furthermore, percentages as high as 70% to 80% have been reported by Mayes, Calhoun, and Crowell (2000).

Interventions. There are few intervention studies in the postsecondary literature related specifically to LD and/or AD/HD. The bulk of literature discusses accommodations and modifications for students with LD and/or AD/HD. These accommodations commonly take the forms of notetakers, extended test time, textbooks on tape, readers, and scribes. The literature has focused on providing accommodations rather than changing teachers' teaching methods or student's learning strategies. However, the effectiveness of explicit interventions such as notetaking and reading instruction have been explored with college students (Hart & Speece, 1998; Suristsky &

Hughes, 1991). Most specifically, Butler, (1995, 1998a, 2002) has studied self-regulation interventions with students with LD in the postsecondary setting.

Butler (1995, 1998a) conducted three studies of self-regulation intervention with college students with LD. Many of the basic principles for her intervention, which is based on self-regulation theory, provide organizational skills for the students. The intervention provided an overall organizational plan from which the students worked to accomplish goals. While working, the student monitored performance toward the goal. Her approach, Strategic Content Learning (SCL), involves interactive discussions to help students define an approach that will lead to attainment of a goal, describe general approaches tried, monitor strategy effectiveness, and modify goals and strategies to address obstacles. Therefore, each student decides on their specific area of difficulty in order to develop a personalized metacognitive strategy approach. When using SCL, each student implements a specific strategy tailored to their need (Butler, 2002).

Using primarily a case study design with six college students with LD, Butler (1995) investigated the effectiveness of SCL. Participants were one male and five female (18 to 36 years old) college students with learning disabilities. Each student chose an important academic task, and then SCL was implemented through individualized support. Students met with the SCL specialist once or twice a week throughout the semester. Both qualitative and quantitative data were collected. Qualitative interviews were conducted to analyze metacognition and strategy development. Pre- and post-test questionnaires were used to evaluate metacognition and self-efficacy. Pre-test and post-test evaluations of student performance were also conducted using materials specific to the student's subject

area. For example, students choosing "writing performance" were asked to write an essay similar to those required in college. The essay was
evaluated for thematic salience, organization, idea flow, and clarity. Each form of performance was scored by two separate evaluators with interrater agreement of 80%.

The qualitative interviews indicated that all students' task performance improved. Most importantly, the interview findings suggested that students became more self-regulated in their learning. The Wilcoxon nonparametric test for dependent samples was used in the statistical analysis. Students reported significant gains in metacognitive knowledge and increased self-efficacy. Although the implications of the study are limited due to design issues (small sample, no control group, measurement primarily self-report), Butler demonstrated that college students with LD may benefit from self-regulation instruction.

In a second study, Butler (1998a) further investigated the SCL instructional model with 30 college students with LD using the same design and measures used in the 1995 study. Participants were 20 female and 10 male (19 to 48 years old) college students with learning disabilities. Students were provided with SCL tutoring for two to three hours per week during one semester. Interviews and questionnaires were used for evaluation. Qualitative interviews were again used to analyze metacognition and strategy development. Metacognition and self-efficacy were assessed using questionnaires at pre- and post- evaluations. Student performance was evaluated at pre- and post-test using domain specific materials as done by Butler (1995). The qualitative interviews indicated that all students' task performance improved. Task performance gains were apparent during the intervention period across reading, writing, and math for 86% of the

individuals. Most importantly, the interview findings suggested that students became more self-regulated in their learning. The Wilcoxon nonparametric test for dependent samples was used in the statistical analysis. Quantitative evidence from questionnaires revealed improvements in students' metacognitive knowledge about essential self-regulated processes, perception in task efficacy, and strategic approaches. Students also transferred skills across context and tasks.

Butler (2000) further expanded the above studies by investigating the SCL intervention process and associated outcomes. She selected three college students with LD from the Butler (1998a) study. Participants were one male and two female (22 to 28 years) college students with learning disabilities. These students were selected because they had difficulties in specific problem areas in the area of writing. The SCL tutoring strategy was provided for two to three hours per week during one semester for the students. The researcher assessed self-efficacy, metacognitive knowledge, self-regulated approach to writing, and quality of writing. Pre- and post-test questionnaires were used to evaluate metacognitive processes and self-efficacy. Interviews were used to evaluate metacognitive perceptions about writing tasks and strategies. Writing performance quality was assessed through writing samples throughout the study. Each student's specific strategy and revisions are described in detail. Problems experienced by the students were similar; however, specifics were noted. The study showed that all students added independent steps to their strategy. No statistical analysis was conducted on the quantitative data; however, increases were noted in metacognitive knowledge and self-efficacy. Writing performance between pre- and post-intervention revealed gains between 5% and 22%.

Summary. Several themes are evident from the review of literature. First, students with LD and/or AD/HD are entering the postsecondary setting in record numbers. Despite this fact, there is limited research on college students with LD and/or AD/HD for many reasons. However, some preliminary studies have been conducted. It is obvious that the environment differs greatly between the elementary, secondary, and postsecondary settings (Brinckerhoff et al. 2002). Qualitative research supports these observations (Turk & Campbell, 2002; Steinber, 1998; Troiano, 2003; Willis, Hoben, & Myette, 1995). Furthermore, interviews with college students with LD and/or AD/HD indicate that these students experience many problems in the postsecondary setting. One issue consistently mentioned across all qualitative studies was problems with organization, time management, and planning. Finally, little intervention work has been conducted with students with LD and/or AD/HD. However, Butler (1995, 1998a, 2000) showed that college students with LD reported increases in self-efficacy, task performance, metacognition, and strategy awareness when presented with a intervention that targeted self-regulation.

Measures

I located several procedures and measures used to assess time estimation and organization. These procedures and tasks are: Functional Time Estimation Scale (FTES), Learning and Study Strategies Inventory (LASSI), Child Organization Scale (COS), and Adult Organization Scale (AOS). This section will analyze strengths and weakness of these measures.

The FTES was developed in 1985 to be used with elementary school students (Dodd et al., 1985). Thirty-eight items comprise the measure that required students to

choose the best estimate of the quantity of time required for various activities, situations, and experiences. One strength of this measure is an internal consistency coefficient of .88. In addition, Dodd et al. (1985) developed and normed the test on a test sample of 1079 elementary school children. This meets Crocker and Algina's (1986) suggestion of "100 examines or 10 times the number of variables" for developing norms (p. 296). Evidence of construct validity was demonstrated through construct validity. A factor analysis yielded three factors. The measure also distinguished between groups based on age and learning disability status. Frances (1988) and Nelson et al. (1990) also provided evidence of discriminate validity for the measure by distinguishing between groups based on presence and absence of emotional disabilities (ED).

However, weaknesses also were apparent. Dodd et al. (1985) were vague in describing their sample. Dodd et al. reported age, gender, and grade level for both the normally achieving students and students with LD. However, race and SES were assumed for both groups, stating that "the population was presumed to be primarily white and middle income" (p.190). Achievement information was not reported for the normally achieving students. Additional problems exist with the description of the LD population. Achievement scores, IQ scores, and number of years in special education were not reported. The failure of authors to include achievement information, along with other basic and essential criteria discussed above, leads to the inability to replicate and generalize the research. A possible confound occurred during the second portion of the Dodd et al. (1985) study. All normally achieving students were tested in the spring, and the students with LD were assessed during the summer. Thus, maturation may be seen as a confounding factor.

When reviewing the technical aspects of the Dodd et al. (1985) FTES measure, several problems were found. Reliability was not reported by individual age groups, but by grouping first- through sixth- grade students together. This artificially inflates the reliability coefficient by taking advantage of age variation. Description of data analysis performed in the study was poorly written and confusing. The author simply stated that a factor analysis was done, and reported the three factors and the proportion of the variance for which they accounted. Dodd et al. did not address the issues of possible missing data in the survey. The author also failed to report eigen values as well as factor loadings. In addition, the author neglected to convey if factors were rotated. Further, a scree plot was not analyzed and limitations were not reported. Although there are some positive aspects of the FTES, the methodological limitations and narrow focus of the instrument preclude its use in the present study.

The LASSI (Weinstein, Palmer, & Schulte, 1987) is a measure used to assess students' use of study strategies on ten scales: (a) attitude, (b) motivation, ©) time management, (d) anxiety, (e) concentration, (f) information processing, (g) selecting main ideas, (h) study aids, (I) self-testing, and (j) test strategies. Each scale contains eight items, except selecting main ideas, which contains five. The LASSI is a seventy-seven item self-report measure that yields individual scale scores, but not a total score. The sub-tests that apply to the topic of organization are time management and information processing. The time management subscale assesses the student's use of time management skills in academic situations. The information processing scale evaluates how well students can use organizational strategies, imagery, and reasoning as learning strategies to process information for future use. The entire LASSI takes about 15 to 20

minutes to administer in a group or individual setting. Scores can be converted to percentile ranks.

Norms for the LASSI were developed from a sample of 880 incoming freshmen from a large Southern university. The coefficient alpha reliability ranged from .68 to .86 across scales. Test-retest correlations ranged from .72 to .85 during a three-week period on a sample of 209 students. Weinstein, Palmer, & Schulte (1987) report in the user's manual that several methods were used to examine validity. The scale scores were compared to other tests or subscales measuring similar constructs. Scales were validated against performance measures. The LASSI has also been subject to repeated tests of user validity. However, no empirical data supporting statements were provided.

Deming, Valeri-Gold, and Idleman (1994) conducted a study with 99 freshman and sophomore college students in developmental studies enrolled in a two-year community college. During the first week of classes students were administered the LASSI. Raw and percentile scores were calculated. Coefficient alpha was calculated and compared to the Weinstein et al's (1987) user's manual. The coefficient alpha levels approached those reported by Weinstein et al (1987) for the majority of scales. However, none of the coefficients were of the same magnitude. Coefficient alpha ranged from .40 on study aids to .79 on time management.

Reviewers Blackwell (1992) and Hayes (1992) raise important reliability and validity questions. The reviewers criticize the lack of demographic information reported in the user's manual with a corresponding concern about the representativeness of the norm sample. Blackwell and Hayes, along with Mealey (1988), raise questions about the LASSI's validity due to the lack of empirical evidence. Blackwell stated further that "the

lack of statistical evidence regarding discrete scales, criterion-related validity, and construct validity will preclude the use of the LASSI by those who require important validity and reliability data" (Review section, ¶ 8). Both Mealey (1988) and Hayes (1992) mirror these thoughts and state that the LASSI must be used with caution.

A study by Zentall et al. (1993) was specifically conducted to develop and validate a researcher-developed measure. In this case, the researchers developed a parent Child Organization Parent Perception Scale (COPPS) and child organizational scale (COS). Questions were generated from literature, clinical experience, and professionals in the field. Both measures included two categories of items. The first category measured the organizational placement of inanimate objects. The second category evaluated the organization of time in relation to temporal organization. Zentall et al. demonstrated construct validity for the COS and COPPS by discriminating between AD/HD and non-AD/HD students.

Several weaknesses, however, were noted. Zentall et al. (1993) developed and performed the analysis for technical characteristics on a sample of only 38 elementary school participants. The sample description provided by the researchers met only three of seven minimum standards developed by the Council for Learning Disabilities (CLD) in 1992. Gender and age were the only student participant data provided. Achievement scores for only half the participants were included. The students with AD/HD included in this study were classified using the Werry-Weiss-Peters (WWP) test for hyperactivity. Students having the label of AD/HD were reported to have scored two standard deviations above the mean on this measure. However, no scores were provided. In

general, it was difficult to obtain a clear picture of the sample who participated in this study.

No reliability analysis was conducted on the COS. The data analysis performed in the study was poorly written. Upon review of the p values provided, two were stated by the author to be statistically significant; yet the p values were greater than .05. Another possible flaw of the study is that the COS was administered by a parent, possibly affecting the participant's responses.

The COS was designed to assess children, not young adults as proposed in this current study. Upon beginning this study, the author contacted S.S. Zentall to ask for relevant literature in this area, if a measure had been developed for college students and additional reliability and validity information. Zentall supplied several additional references. Zentall (personal communication, April 11, 2001) reported that very little reliability and validity information was available for the COS. She also indicated that there were no measures designed for college students. However, she and her colleagues had developed an Adult Organizational Scale (AOS) which she provided to me. The AOS measure was developed for adults based on the COS. However, no reliability or validity information was provided with the instrument, and none could be located.

After I reviewed the above measures, it was apparent that an appropriate measure of organization for college students did not exist. Of the available measures, none have been developed for or used with college students. Poor participant description, limited theoretical bases, and small sample sizes also limit the usefulness of the measures, as do poor reliability and validity. As a result of the these factors, it was determined that an

appropriate instrument to assess the organization of college students needed to be developed.

In the development of a new instrument to assess organization, theoretical framework questions needed to be addressed. Self-regulation theory is supportive of the concept of organization, and therefore has many similarities. Many times, attention is organizational skills through the self-regulation of behavior. Self-regulatory processes and beliefs are demonstrated in three categories or cyclical phases: forethought, performance, and self-reflection (Zimmerman, 1998, 2000; Figure 1). Many of the processes are parallel, or essential, to organizational skills. The forethought stage includes goal setting, effort planning, time management, and planning with regard to assessing behavior. The second stage, performance, includes important organizational aspects, such as self-monitoring and self-instruction. The final stage of self-regulation theory is self-reflection. This stage is comprised of self-evaluation of performance and reaction (Zimmerman, 1998, 2000). Self-regulation theory contains many of the same behaviors as organization and is supportive of this concept. For example, many of the basic principles of self-regulation interventions, provide organizational skills for students with disabilities (Butler, 1995, 1998a, 2000). These interventions also provide an overall organizational plan from which the student works to accomplish goals (Butler, 1995, 1998a, 2000).

Through the development of the measure, self-regulation theory provided a general structure upon which to reflect and add additional information. Methodologically, self-regulation theory can be influential in the instruction, academics, and assessment of students with disabilities. However, the primary purpose of this

measure is to evaluate organization, a element of self-regulation theory; not self-regulation theory itself. Therefore, not all aspects of self-regulation are reflected in the definition of organization utilized or the measure.

Summary

The purpose of this chapter was to provide support for the need to develop an instrument to measure the organizational skills of college students. Although there is more anecdotal than empirical evidence concerning organizational problems, there are a few studies that document different facets of organizational issues in school-age children. Preliminary studies have found a change in lifestyle between high school and college. Data indicates that students with LD and/or AD/HD do not outgrow their difficulties, but continue to experience problems into the post-secondary setting. Overall, students reported difficulties with organization skills that could impact college success. A few intervention studies centered in self-regulation and LD bolster this claim. However, further work needs to be completed.

To evaluate the organization skills of college students, an appropriate measure needs to be created. Of the measures reviewed in this study, none have been developed for or used with college students. The measures provided limited sample size and description, with little to no theoretical bases. These factors, along with questionable reliability and validity, limit the usefulness of the measures reviewed. However, this review has influenced the items to be included on the Measure of College Students' Organizational Skills (MCSOS). Key concepts throughout the review of literature, theory, and measures have been critical in identifying items to added to the instrument.

Therefore, the purpose of this study was to evaluate the reliability and validity of the Measure of College Students' Organizational Skills (MCSOS) by (a) assessing the internal consistency reliability of the MCSOS total scale and subscales, (b) assessing the MCSOS test-retest reliability, (c) assessing construct validity through factor analysis, and (d) evaluating construct validity by comparing responses of normally achieving students and students with LD and/or AD/HD.

The research questions were: (1) Are the MCSOS total test and subscales internally consistent? (2) Are the MCSOS total and subscales scores stable? (3) Are the conceptual factor structure and empirical factor structure similar? (4) Do group differences exist on the MCSOS between normally achieving students, students with LD, students with LD+AD/HD, and students with AD/HD? It was expected that students without documented disabilities would obtain higher organization scores than students with disabilities.

Chapter III

Method

Overview

The purpose of this investigation was to evaluate the reliability and validity of the Measure of College Students' Organizational Skills (MCSOS) by (a) assessing the internal consistency reliability of the MCSOS total scale and subscales, (b) assessing the MCSOS test-retest reliability, (c) assessing construct validity through factor analysis, and (d) evaluating construct validity by comparing responses of normally achieving students and students with LD and/or AD/HD. Prior to undertaking this investigation, a pilot study was conducted to examine reliability and content validity of the Adult Organization Scale - College (AOS-C) (Hillman, 2002), the first version of the Measure of College Students' Organizational Skills (MCSOS). The pilot study, described next, was conducted specifically for instrument development. A summary of the findings from the pilot study is presented next, with the complete report in Appendix K. The method for the current study follows the summary of the findings from the pilot study.

Pilot Study

Instrumentation

Participants. Participants were 100 freshman and sophomore college students (ages 19 to 44) from two- and four-year colleges in the Mid-Atlantic United States. Twenty-six of the 100 students in the sample had a disability (LD, AD/HD, psychiatric, physical, and other). The instrument was administered to students in a classroom setting using standardized directions.

Item development. Procedures for development were based on Crocker and Algina's (1986) six steps for instrument development: (a) identify the purpose, (b) identify behaviors representing the construct, (c) construct a pool of items, (d) have items reviewed, (e) try out items, and (f) develop standardized directions and administration procedures.

I developed a definition of the construct of organization by (a) drawing upon extant definitions of organization, (b) applying tenets of self-regulation theory, and (c) identifying behaviors believed to demonstrate organization. Items were developed to reflect four aspects of organization used for this study: (a) structure and plan a task, (b) manage activities within a time framework, (c) systematically arrange objects and assignments within physical space for rapid retrieval, and (d) self-reflection. The first category of behaviors reflects the structuring and planning of tasks and activities that occur in the forethought stage of self-regulation theory. The second category of behaviors includes the organization of tasks and allocation of time as represented in the performance stage of self-regulation theory. The third category of behaviors reflects the organization of objects with items related to the organizational placement of inanimate objects. The fourth category of behaviors reflects the ability to evaluate performance and determine if the goal was accomplished. These categories of organizational behavior are a modification of Zentall et al. (1993). Through this process, I recognized that the definition I created had several similarities to self-regulation theory, which broadened the perspective of organization used for the study. However, the definition was not derived solely form self-regulation theory. For example, motivation is not addressed in the survey

but is an integral part of self-regulation theory. Having defined the construct, the next step was item construction.

To produce a pool of items, I began by adapting items from the AOS (Zentall, personal communication, April 11, 2001). Items were selected from three sources to reflect the four dimensions of the definition. First, the applicable items on the COS (Zentall, 1993) were rewritten to be appropriate for college students ($N = 24$). Second, relevant items from the Adult Organizational Scale (AOS) were included ($N = 12$). Finally, I developed items to reflect behaviors identified in accordance with the literature and expert opinion ($N = 19$). See Appendix B for a specific list of items and their origin. I made an effort to have equal numbers of items representing each category of the definition. Finally, Dr. Deborah Speece and I reviewed the items for format, appropriateness or relevance, grammar, bias, and readability. Then each item was randomly assigned an item number for the survey. A 5 point Likert scale was used. Isaac and Michael (1997) stated that five positions are most commonly used for a Likert scale. The scale ranged from 1, (never), to 5, (always). Items were positively and negatively worded to attempt to force respondents to read each item rather than adopting a response set. The new instrument contained 55 items and was named the Adult Organization Scale - College Version 1 (AOS - C1) (Appendix C).

Validity. Content validity was evaluated through an analysis of seven expert reviewers' comments. Experts who analyzed the instrument are listed in Appendix D. Items were deleted if three or more experts reported that the item did not fit (Appendix E). Based on this criterion, five items were deleted. Another item was deleted due to a change in focus of the instrument from personal and academic organization to a strictly

academic purpose, as suggested by experts. Items that had a personal and academic purpose were reworded to focus only on the academic concentration. For a detailed analysis, refer to Appendix K.

Based on the experts' suggestions, fourteen items were added on the following topics: anticipating problems, following through with plans, adjusting plans, reflection, poor planning, goal setting, asking advice, coming up with plans of action, enacting plans once they are made, reflecting on outcomes, and adjusting plans (Appendix F). Some items were reworded to improve readability. The experts commented that the time and structure aspects of organization were similar and might need to be collapsed. The experts believed that the items adequately covered the construct of organization. Based upon feedback gained from these professionals, the AOS-C1 (Appendix C) was revised into the final verison of the survey instrument, the Adult Organization Scale - College Version 2 (AOS-C2) (Appendix G). This version had 60 items.

Initial evidence for construct validity was provided via factor analysis and analysis of differences between pilot study participants with and without LD / AD/HD. A preliminary exploratory factor analysis was conducted to determine the number of common dimensions underlying the instrument and their similarity with the proposed scales, an indicator of construct validity.

A four-factor forced varimax rotated solution accounted for 45.26% of the total variance. The eigenvalues were 10.17, 7.21, 7.06, and 2.70. An item was assigned to a factor if its loading was .40 or greater. However, ten items did not load at .40 or higher on any of the four factors. Twenty-one of the 60 rotated items loaded at .40 or greater on the first factor and accounted for 16.96% of the variance. Items for this factor reflected

the student's ability to structure/plan a task and manage it within a time framework. Factor one included ten structure items, eight time items, three physical space items, and no self-reflection items.

Thirteen of the 60 items loaded on the second factor. This factor accounted for 12.02% of the scale variance. Items that loaded on this factor were related to the students' ability to systematically arrange objects and assignments within physical space for rapid retrieval. Factor two included no structure items, five time items, eight physical space items, and no self-reflection items.

Thirteen of the 60 items loaded on the third factor and accounted for 11.77% of the variance. The third factor related to self-reflection and included two structure items, one time item, two physical space items, and eight self-reflection items. Three of the sixty items loaded on the fourth and final factor, which accounted for 4.5% of the variance. This factor did not have an apparent theme. Factor four was composed of one structure item, one time item, one physical space item, and no self-reflection items.

Analysis of group differences also provided insights into construct validity. Exploratory t-tests were conducted to compare the 15 students with disabilities (8 students with LD and 7 students with AD/HD) to students without disabilities on the total scale score and subscale scores. Comparisons were made on both the conceptual and empirical factor subscales. In the results for total scale on the conceptual subscales, there was a significant difference between students with LD and AD/HD and non disabled students. A difference was also found on the physical space subscale. The same difference was apparent on the empirical subscale, factor 2, which represents physical

space. Students with disabilities performed significantly lower than students without disabilities on the physical space subscale.

Reliability. Internal consistency reliability coefficients of total and subscale AOS-C2 scores were calculated with coefficient alpha. The reliability of the total scale was .9406. There was a negligible increase if one item was deleted (r=.9416). Subscale reliability ranged from .78 to .90 when one item was deleted.

Overall, reliability proved to be promising. The pilot study established content validity through the evaluation of the AOS-C by experts in the field. Construct validity was promising, but required a larger sample to further explore the validity of the instrument. The pilot study committee made several recommendations. First, the committee suggested: (a) obtain a larger sample, (b) not drop any items due to small sample size of pilot, (c) evaluate of test-retest reliability to evaluate stability, (d) expand theoretical background and discussion in literature review, and (e) review items that did not load on any of the constructs for clarity, format, and grammar. The complete analysis can be read in Appendix K. The comments and suggestions were used to revise the AOS-C2 into the instrument that was used for this study. Extensive changes were made to AOS-C1 and AOS-C2 through the revision process. The resulting instrument was titled Measure of College Students' Organizational Skills (MCSOS) (Appendix H). The conceptual subscale item composition is listed in Table 1.

Study Design

Six hundred ninety-two college students including 93 students with disabilities (LD, LD+AD/HD, AD/HD, physical, and other disabilities) from a university in the mid-southeastern United States were administered the MCSOS. The MCSOS was assessed for

both reliability and construct validity. Reliability was assessed through internal consistency and test-retest methods. Construct validity was evaluated through factor analysis and MANOVA on group differences.

Participants

Recruitment. Participants were Freshmen, Sophomores, Juniors, and Seniors who attended a four-year university in the southeastern United States. The university enrolls 11,500 undergraduate and 2,700 graduate students. Students in the study represented a variety of academic departments. To obtain a representative sample of undergraduates, an effort was made to sample students from all five academic colleges on campus. Core classes required by all colleges were chosen in order to sample freshman and sophomore students. The classes included Accounting 200, Biology 221, History 102, and Speech Communication 111. In an effort to sample juniors and seniors across colleges and maximize time and resources, I contacted the deans of all five colleges on campus in order to determine the departments in each college with the largest enrollments. For selecting of specific classes, the chair of the specified departments was contacted in order to determine the classes with the largest enrollment in each department. I randomly assigned two colleges to juniors and the remaining three colleges to seniors. Juniors were sampled from the following colleges and departments: College of Health (Nursing) and the College of Business and Economic Development (Marketing/Management). Classes sampled were Nursing 306, Nursing 336, and Marketing 300. Seniors were sampled from the following colleges and departments: College of Education and Psychology (Curriculum Instruction and Special Education), College of Arts and Letters (History and Sociology), and College of Science and Technology (Biology and Engineering

Technology). Classes sampled were History 453, Special Education 400, Engineering Technology 492, Sociology 462, and Biological sciences 417. Professors from the identified classes were contacted via e-mail, mail, and telephone to determine their willingness to allow their class to participate in the study. A total of 34 professors were contacted, with 16 agreeing to participate. Of the remaining 18 professors, 7 indicated that they did not have time in their schedule to participate, and the remaining 11 did not respond.

To obtain a sample of students with documented disabilities, the Office of Disability Accommodations was contacted to determine if they would allow me to conduct the study from their office. I met with the ODA coordinator to request permission. She referred me to her superior, the ADA compliance officer for the university and the coordinator of ODA's parent organization. I met with her and explained the study and the procedures. Permission was given at ODA to conduct the survey.

All students who receive services from the ODA office qualify for services under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act of 1973. Students must supply current (within three years) documentation of their disability in order to receive services. Criteria for AD/HD and LD include an evaluation from a qualified professional. To receive services for LD, ODA must receive a diagnostic report that includes a diagnostic interview, an assessment of aptitude, a measure of academic achievement, a measure of information processing, and a fifteen-point discrepancy between aptitude and achievement. Only certain tests that are judged reliable and valid

are accepted by the ODA office (Appendix A). Actual test scores from standardized instruments must be provided in the documentation as well.

A diagnosis of AD/HD requires a diagnostic report that includes a diagnostic interview, statement of early impairment, evidence ruling out alternative diagnoses, relevant neuropsychological or psychoeducational assessment information, and identification of current and retrospective symptoms that meet Diagnostic and Statistical Manual of Mental Disorders (1994) criteria for AD/HD. In addition, the report must include statements of how patterns of inattentiveness, impulsivity, and/or hyperactivity are being used to determine AD/HD, indication whether medication was in use during the time of the evaluation, how AD/HD affects the student in the academic situation, and a specific diagnosis of AD/HD.

To obtain a sample of students with disabilities, ODA handled the administration of the survey in their office. Only students registered with ODA participated in the study. During a two month period registered ODA students were asked by trained graduate assistants if they would like to participate in a voluntary research study when they came to conduct business at the ODA office.

Sample. Demographic information on the 692 participants who completed the survey are presented in Table 2. The participants were primarily female (69%), primarily students without disabilities (86%), and primarily Caucasian (73%). Of the 14% ($N = 95$) of students with disabilities, 6% reported LD, 3% reported LD+AD/HD, 3% reported AD/HD, 1% reported physical disabilities, and 1% reported other disabilities. The academic status of the 692 participants included 21% Freshmen, 24% Sophomores, 25% Juniors, and 30% Seniors. Over half of the sample had parents who attended or

completed college. Forty-two percent of the participants resided in campus housing while 32% lived off campus with friends, and the remaining 26% lived at home. The college distribution was similar to the sample as well: Arts and Letters 20%, Business and Economic Development 17%, Education and Psychology 23%, Health 22%, and Science and Technology 15%.

The university's demographics were similar to the sample with the exception of disability. The university campus population was comprised of 60% females, 97% non-disabled students, and 68% Caucasian. The distribution of academic status for the university was 21% Freshman, 24% Sophomore, 25% Junior, and 30% Senior. Of the 3 % (N= 253) of students with disabilities served by the ODA office, 28 % were diagnosed with LD, 21% were diagnosed with AD/HD, 25% had physical disabilities, 10% had visual disabilities, 6% had hearing disabilities, 9% had psychiatric disabilities, and 1% were reported as having other disabilities.

Because the disabled and non-disabled groups were to be compared as part of the analysis for construct validity, group differences on background measures were assessed. Several variables were collapsed because cells had too few members for analysis. Race was collapsed into two groups: majority (Caucasian) and minority (African American, Asian, and other). Both mother's and father's highest level of education were collapsed into three categories: high school (less than 12 years and high school completed), college (some college and college completed) and graduate (some graduate, master's completed, and post-master's). For group status (ND, LD, LD+AD/HD, AD/HD), the chi-square analyses were significant for mother's education, $\chi^2(6, N = 688) = 21.05$, $p = .002$, and father's education $\chi^2(6, N = 679) = 13.86$, $p = .031$. The following variables were not

significant: gender $\chi^2(3, N = 692) = 4.97$, $p = .174$, residence $\chi^2(9, N = 692) = 15.99$, $p = .067$, and race $\chi^2(3, N = 692) = 4.53$, $p = .209$. Cell chi squares were inspected to determine the source for differences on parents' education. It appeared that students with LD and AD/HD had mothers and fathers with more education than students with LD+AD/HD and students without disabilities (ND).

Descriptive statistics for continuous variables are shown in Table 3. The participants' self-reported ACT averaged 22.58 (SD=3.88) and college GPA was 3.17 (SD=.49). The participants averaged 20.02 (SD= 5.16) years of age. Analysis of variance (ANOVA) was used to test for differences by group status. There were significant group differences in college GPA and ACT scores; however, the test for age was not significant (Table 4). Post hoc tests were conducted using Tukey HSD. Students with LD scored significantly lower on the ACT than students with LD+AD/HD ($p = .003$), AD/HD ($p = .022$), and ND ($p = .002$). Significant differences were also noted between students with LD+AD/HD and students with LD ($p = .017$) and ND ($p = . 000$) on GPA, favoring ND students.

A total of 709 surveys were collected through administering the MCSOS to the intact undergraduate classes in order to obtain the sample of nondisabled students. I received 13 MCSOS surveys completed by students who self-reported having LD, LD+AD/HD, AD/HD, and physical disabilities. However, because I could not confirm the nature of the disability or the criteria used for diagnosis, these 13 surveys were discarded and were not included in the analysis. Three additional surveys were also discarded from this group because the participants selected the same answer for every item. These surveys were considered invalid.

Ninety-five surveys were collected from the ODA office. These completed surveys were comprised 44 students with LD, 20 students with LD/ AD/HD, 17 students with AD/HD, 9 students with physical disabilities, and 7 students who reported their disability as "other." All completed the survey in the ODA office.

Procedure

I contacted the professors who agreed to participate in order to schedule a time in which to administer the instrument. Standardized directions were read to the participants (Appendix I) and questions were answered. Students then completed the MCSOS. Completion of the survey was voluntary, and permission was assumed if the participant completed the survey, which took 10 minutes..

To evaluate test-retest reliability, 32 students took the MCSOS twice over a one month period of time. A power analysis was conducted and determined that a sample size of 13 would have adequate power (.80) to determine a .70 test-retest reliability. The researcher identified test-retest classes through professor willingness to allow a second visit. Three professors expressed a willingness to allow me to return to their classroom. I reviewed the classes based on academic status and colleges represented. I choose the two classes of Introduction to Special Education due to the variety of student majors and colleges represented.

Students with disabilities were asked by ODA if they would like to participate in a research study when they entered the office. Only students registered with ODA were given questionnaires. Three graduate students who worked for ODA underwent training that included (a) basic description/purpose of the study, (b) explanation that the questionnaire was not mandatory, ©) explanation that only registered ODA students

could complete the survey, (d) written directions, and (e) instructions regarding how to handle completed instruments. Students were asked to complete the survey when the trained graduate students confirmed that the students were registered with the ODA office. Written directions were placed on the MCSOS for the student's information (Appendix J). If students chose to complete the survey, they completed it in the ODA office in a quiet area. After completion, the student returned the questionnaire to the graduate assistant in a sealed envelope. The surveys were returned to me periodically throughout the semester.

Data Analysis

The data obtained from the MCSOS were entered on a IBM computer and scored using SPSS version 10 for Windows software. Each protocol was assigned an ID number if the participant did not provide the last four digits of his/her Social Security number. A data check of 20% of the surveys was conducted after the final data were entered. A total of 5 errors were detected from a possible 1168 errors. The error rate of .004 % was considered low, and further checks were deemed unnecessary. After the data check was conducted, I reviewed the instrument for negatively worded items. The scores were reversed so that high scores reflected positive attributes.

Several derived variables were calculated. Total score for the MCSOS was computed by summing responses for all items. Conceptual subscale scores were computed by summing the items assigned to each of the four subscales: structure, time, physical space, and self-reflection. The structure subscale included 17 items, the time subscale contained 16 items, the physical space subscale consisted of 13 items, and the self-reflection subscale included 14 items. Scores for empirical factors were calculated

by summing items that loaded greater than .4 on a factor. Item scores were used to represent factors rather than factor scores for several reasons. Hair, Anderson, Tatham, & Black (1998) suggest that the scale is untested and exploratory in nature and that the use of item scores or summated scale scores should be strongly considered.

Coefficient alpha was used to evaluate total and subscale internal consistency reliability for conceptual subscales and empirical factors. As part of this analysis, an item analysis was conducted to determine if items should be removed to improve reliability. Second, test-retest reliability was assessed via correlation coefficients for total and subscale scores. A decision rule of .80 was selected to evaluate reliability based on Sattler's (2001) recommendation that this value is required for clinical and psychoeducational tasks.

Next, several analyses were used to evaluate construct validity. An exploratory factor analysis was conducted to determine the number of common dimensions underlying the instrument, an indicator of construct validity. Factor analysis essentially groups related items. This was done by computing correlations among all the variables and then determining factors based on variables that correlated highly with one another and not with other variables. A principal factor analysis was conducted using a rotated varimax solution. I expected to find four factors mirroring the content of the four conceptual subscales. Principal axis factoring (PAF) is the most common factor analysis method used to evaluate assessment measures (Kim & Mueller, 1978). The PAF identifies items that load strongly on one factor, and also allows for score estimation (Kim & Muller). Several rotation methods can be used to receive orthogonal or

(independent) factors, including: quartimax, varimax, and equimax. I choose a varimax rotation to maximize the variance of the instrument (Kim & Muller).

Finally, group differences were evaluated in order to further examine construct validity. First, an ANOVA was used to evaluate differences on group status (LD, LD+AD/HD, AD/HD, ND) and academic status (freshman, sophomore, junior, senior) on total MCSOS score. Then four MANOVA's were used to analyze group differences on the conceptual subscales and empirical factors. Two MANOVA's were used to investigate differences due to group status. The final two MANOVA's evaluated differences due to academic status. Multiple multivariate MANOVA's were conducted because subscale scores are used. The variables are not independent of one another; therefore, four separate analyses were conducted. Due to the fact that I was conducting 5 analyses (1 ANOVA & 4 MANOVA's), the Bonferroni method was used to control for type 1 error (0.05/6 = 0.008). There is not agreement on interpreting effect sizes when traditional levels of significance are not reached, but because this is an exploratory study, I will report and interpret effect sizes when $p < .20$. Both the American Psychological Association (2001) and Thompson (1999) recommend reporting an index of effect size or strength of relationship with the results of all statistical tests. The Wilks criterion was used to evaluated the presence of a multivariate differences in the study. Eta Squared is the "ratio of between group sum of squares to the total sum of squares" and is recommended to ascertain effect size for a one way analysis of variance (ANOVA)(Pedhazure, 1997) Cohen's d statistic for weighted variances/unequal means was used. Effect sizes were calculated using $(X^1 - X^2) / [(Sd^1 \times N^1) + (Sd^2 \times N^2) / (N^1 + N^2)]$ (Cohen, 1988). Effect sizes are interpreted as standard deviation units (Thompson,

1999). Cohen (1988) suggested that effect sizes of .20, .50, and .80 are considered small, medium, and large, respectively.

Chapter IV

Results

This chapter presents the analyses conducted to assess the construct validity and reliability of the MCSOS. Results for construct validity are presented first, followed by the reliability analysis. Validity results are presented first to establish and understand the empirical factors before the reliability of these factors and others are discussed.

Construct Validity

Descriptive Statistics for MCSOS Conceptual Scales

The MCSOS included 60 items that were rated on a 5 point Likert scale. Means and standard deviations for each item can be found in Table 5. Mean scores ranged from 2.56 to 4.41, so it appears that the respondents did not use the full range of response options, especially 1 (never). The researcher examined the histogram and skewedness statistic for each item to detect if outliers were present (Lomax, 1998). The benchmark used to judge the skewedness of an item was 2.0 (Lomax). No outliers were found. Items' intercorrelations are in Table 6. Although most of the correlations were significant, they were low to moderate in magnitude (Table 6) . Means and standard deviations for total scope and conceptual subscales are reported in Table 7. MCSOS - total and conceptual subscales shared common variance (Table 8), with all comparisons being significant. Total scores when compared with the subscales variance ranged from .71 to .88. Subscale variances ranged from .43 to .69.

Factor Analysis

Empirical factors. An exploratory factor analysis was conducted to determine the number of common dimensions underlying the instrument and similarity to the

conceptual scales, an indicator of construct validity. I used two methods to determine the number of factors to extract. I began by reviewing factors with eigenvalues greater than 1.0, then conducted a strict visual analysis of the scree plot (Hair et al., 1998). A scree test was used to determine the number of factors represented in an analysis. (Kim & Mueller, 1978). The strict visual analysis included analyzing the curve of the scree plot for the number of variables possible before the curve becomes an approximate horizontal line (Hair et al.). Prior to rotation, the factor analysis produced fourteen factors with eigenvalues greater than 1.0. The fourteen factors accounted for 62% of the variance. The eigenvalues ranged from 14.28 to 1.00. A strict visual interpretation of the horizontal line of the scree plot revealed six factors (Figure 2).

The six-factor forced varimax rotation accounted for 41.90% of the total variance. The eigenvalues were 22.85, 8.36, 3.45, 3.06, 2.37, and 1.76. Items were assigned to a factor if the loading was at .40 or greater on any of the four factors. Fourteen items did not load at .40 or higher. Table 9 reports numerical item loadings for each factor, while Table 10 lists a description of items that loaded on each factor. Table 10 also includes the items that did not load $\geq$ .40.

Description of empirical factors. As can be seen in Table 9, 19 of the 60 rotated items loaded at .40 or greater on the first factor. This factor accounted for 22.89% of the total variance in the instrument. Items for this factor reflected primarily the student's ability to monitor and plan a task. Factor 1 included 7 of 17 structure items, 2 of 16 time items, 0 of 13 physical space items, and 10 of 14 self-reflection items. Factor 1 was named empirical self-reflection (ESR).

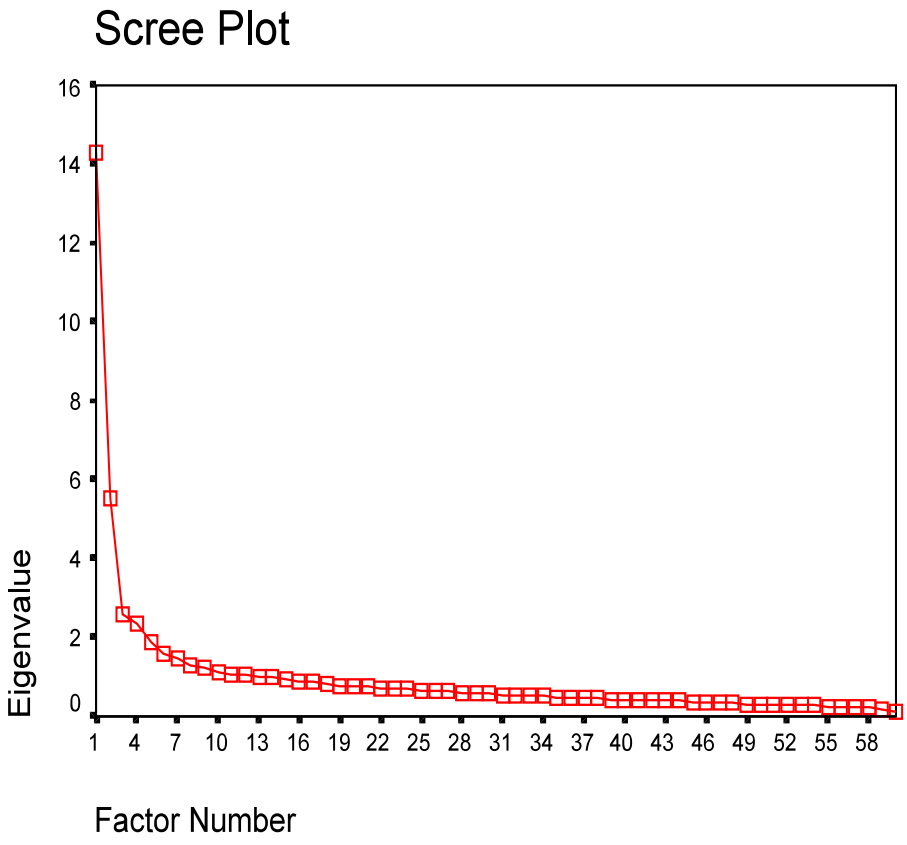

Figure 2. Scree plot of eigen values.

Nine of the 60 items loaded on the second factor (Table 9). This factor accounted for 8.36% of the variance. Items that loaded on this factor were related to students' ability to systematically arrange objects and assignments within physical space for rapid retrieval. Factor 2 was composed of 0 structure items, 0 time items, 9 of 13 physical space items, and 0 self-reflection items. Factor 2 was named empirical physical space (EPS).

Five of the 60 items loaded on the third factor and accounted for 3.45% of the variance. The third factor related to the use of a calendar and lists. Factor 3 included 4 of 17 structure items, 2 of 16 time items, 0 physical space items, and 0 self-reflection items. Factor 3 will be entitled empirical sequence time (EST) to represent the use of lists and calendars.

Seven of the sixty items loaded on the fourth factor, which accounted for 3.07% of the variance. This factor reflected the ability to manage time within a framework. Factor 4 included 0 structure items, 6 of 16 time items, 0 physical space items, and 1 of 14 self-reflection items. Factor 4 was named empirical planning time (EPT).

Three of the 60 items loaded on the fifth factor. This factor accounted for 2.37% of the total variance. Items that loaded on this factor were related to students' ability to physically have themselves at a place such as class. Factor 5 was composed of 0 structure items, 3 of 16 time items, 0 physical space items, and 0 self-reflection items. Factor 5 was named empirical proximity relationships (EPR).

Three of the 60 items loaded on the sixth and final factor. This factor accounted for 1.76% of the total variance. Items that loaded on this factor were related to the students' ability to ask others for information regarding assignments. Factor 6 was

composed of 2 of 17 structure items, 1 of 16 time items, 0 physical space items, and 0 self-reflection items. Factor 6 was named empirical advice (EA).

Table 11 presents means and standard deviations for the computed empirical factor scores, while Table 12 reports the correlations of the empirical factor subscales with the conceptual subscales (Hair et. al., 1998). There is considerable overlap between the two types of subscales. Figure 3 depicts the relationships among conceptual and empirical subscales. For visual clarity only correlations greater than .60 are shown. Solid lines represent the majority of items in that concepts are shared. Dotted lines portray that the categories include some of the same items, although not a majority.

Overall, Factor 1 (ESR) reflected a majority of self-reflection items with structure and time items included. Factor 2 (EPS) mirrored the conceptual scale of physical space. Factor 3 (EST) included both structure and time times. Factor 4 (EPT) and Factor 5 (EPR) both dealt with different aspects of time. Factor 6 (EA) included structure and time items as well, although all items shared the topic of advice. Overlap between empirical and conceptual factors is evident.

Group Differences

Group differences on total scale. First, a one way analysis of variance (ANOVA) with group status (ND, LD, AD/HD, LD+AD/HD) as the factor and the total score of the MCSOS as the dependent variable was conducted. Another one way analysis of variance (ANOVA) with academic group status (freshman, sophomore, junior, senior) as the factor and the total score of the MCSOS as the dependent variable was conducted to determine differences between academic groups status on the total MCSOS. Tables

Figure 3

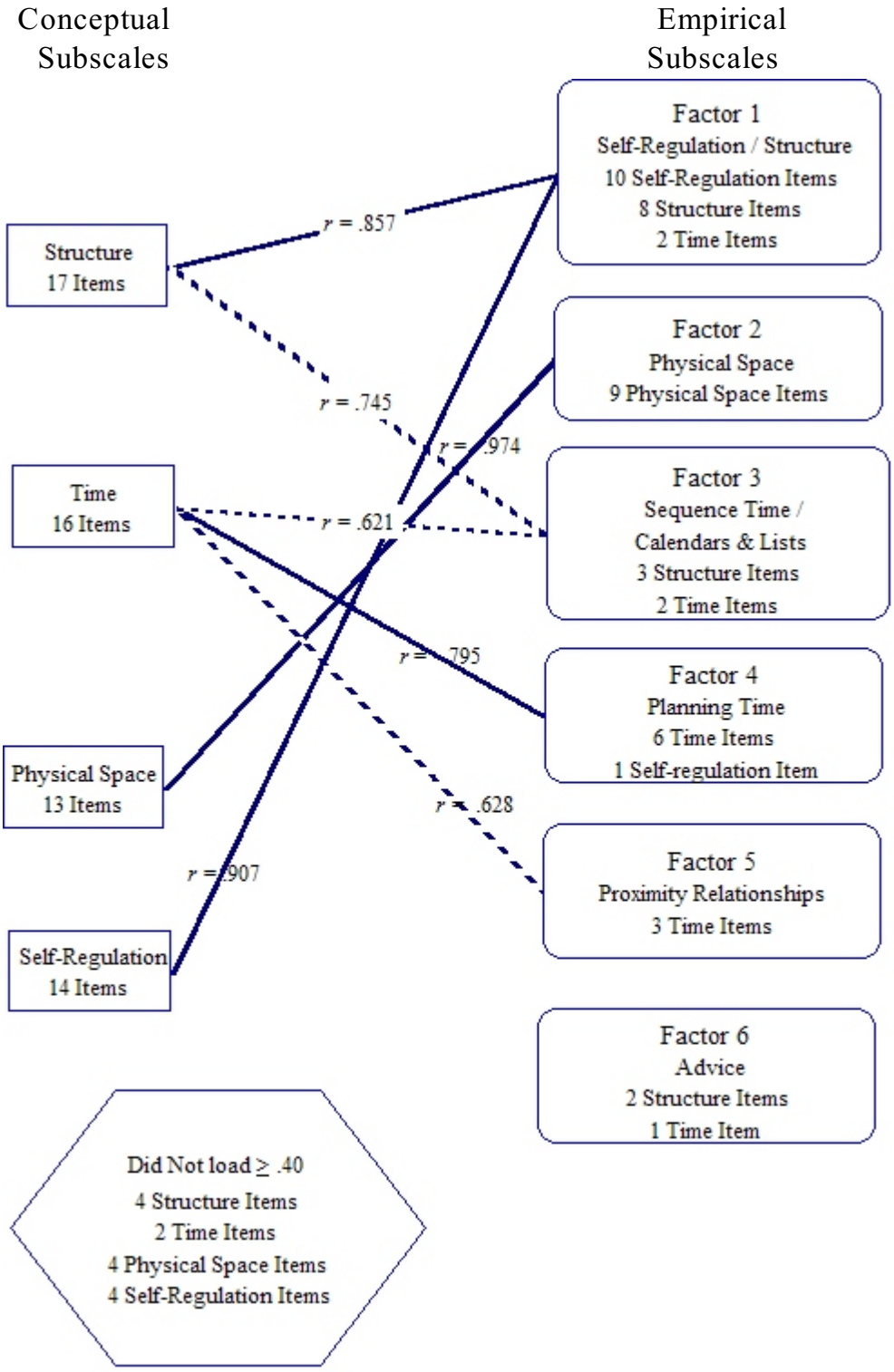
Conceptual Subscales
Empirical Subscales
Structure
17 Items
Time
16 Items
Physical Space
13 Items
Self-Regulation
14 Items
r = .857
r = .745
r = .974
r = .621
r = .795
r = .628
r = .907
Factor 1
Self-Regulation / Structure
10 Self-Regulation Items
8 Structure Items
2 Time Items
Factor 2
Physical Space
9 Physical Space Items
Factor 3
Sequence Time / Calendars & Lists
3 Structure Items
2 Time Items
Factor 4
Planning Time
6 Time Items
1 Self-regulation Item
Factor 5
Proximity Relationships
3 Time Items
Factor 6
Advice
2 Structure Items
1 Time Item
Did Not load ≥ .40
4 Structure Items
2 Time Items
4 Physical Space Items
4 Self-Regulation Items

Figure 3. Representation of conceptual subscales vs empirical factors. Solid lines represent the majority of items in that concept are shared. Dotted lines portray that the categories include some of the same items although not a majority. Correlations are reported on all the links to show common variance.

12 and 13 present descriptive statistics for the total scale, conceptual subscales, and empirical factors by academic and group status, respectively. Using the Bonferroni adjustment, the test for academic status was not significant ($F_{(3, 688)} = 0.307$, $p = .820$), while the test for disability group was significant ($F_{(3, 688)} = 5.415$, $p = .001$). Post hoc tests were conducted using Tukey HSD, which compared harmonic means. Thus, the results are reported in terms of mean difference and a *p* value (Lomax, 1998). Students with AD/HD scored significantly lower than students without disabilities ($p = .008$, $ES = .78$) on the total MCSOS (Table 15). There were no other group differences on the total score. However, small to medium effect sizes were noted, ranging from .20 to .58 (Table 16).

Academic status differences on conceptual subscales and empirical factors. Two MANOVA's were used to evaluate differences between groups based on academic status for the four conceptual subscales (organization, planning, structure, self-reflection) and six empirical factors. Using the Bonferroni adjustment, differences between the academic status groups were not significant on either the conceptual subscales ($F_{(3, 688)} = 1.459$, $p = .133$ using Wilk's criterion, eta squared was 0.008) or empirical factors ($F_{(3, 688)} = 1.394$, $p = .124$ using Wilk's criterion, eta squared was 0.014) (Table 15). Therefore, further post-hoc tests were not conducted.

Group status differences on conceptual subscales. A MANOVA with group status (ND, LD, AD/HD, LD+AD/HD) as the factor and the conceptual subscales of the MCSOS as the dependent was conducted. Using the Bonferroni adjustment, the omnibus test among the group status groups was significant ($F_{(3,688)} = 7.434$, $p = .000$ using Wilk's criterion, eta squared was 0.041). Univariate follow-up tests were significant for the

conceptual factors of time ($F_{(3, 688)} = 9.773$, $p = .000$), physical space ($F_{(3, 688)} = 7.741$, $p = .000$), and self-reflection ($F_{(3, 688)} = 7.232$, $p = .000$), but not structure ($F_{(3, 688)} = 2.009$, $p = .111$) (Table 15). Tukey HSD post-hoc tests revealed significant differences between groups on three subscales. Table 16 reports post-hoc analyses of group status differences and summarizes the effect sizes (ES) for variables at the $p < .30$ level.

Eighteen post-hoc analyses were conducted with the conceptual factors, with all possible pairs tested except structure, which was not significant. On the subscale of time, students with LD achieved higher scores than did students with AD/HD ($p < 0.024$, ES = .77) and students with LD+ AD/HD ($p = 0.000$, ES = 1.4). Another significant difference was found between the ND students and students with LD+AD/HD ($p = 0.000$, ES = 1.01), with ND students achieving higher scores. Further post-hoc results for this subscale were not significant, as seen in Table 16. However, when ND students were compared with students with LD ($p = .099$, ES = -.356) and students with AD/HD ($p = -.259$, ES = 0.449), small to medium effect sizes were found.

Follow up tests on the physical space subscale showed that students with LD outperformed students with AD/HD ($p = 0.037$, ES = .81). ND students scored higher than both students with AD/HD ($t = 7.17$, $p = 0.001$, ES = 0.90) and students with LD +AD/HD ($p = 0.008$, ES = 0.716). Further analysis did not reveal additional significant differences among the groups. However, when students with LD were compared with students with AD/HD, a medium effect size was found ($p = .133$, ES = .58) in factor of respondents with LD.

On the subscale of self-reflection, ND students outperformed students with LD ($p = 0.006$, ES = .51) and students with AD/HD ($p = 0.003$, ES = 0.85). No other significant

differences between groups were obtained. However, when students with LD were compared with students with LD+AD/HD, a small effect size of 0.47 (p = .287) was found favoring LD. Also, students with LD+AD/HD exceeded students with AD/HD, as indicated by a medium to large effect size of 0.73 (p = .063).

To summarize, when groups were compared on the conceptual subscales, the ND students consistently performed better than students with AD/HD or LD+AD/HD. ND students performed self-refection tasks better than students with LD. Students with LD scored higher than students with AD/HD on two of the three significant subscales. When looking at effect sizes, these differences were confirmed.

Group status differences empirical factors. A MANOVA with group status (ND, LD, AD/HD, LD+AD/HD) as the factor and the empirical factors of the MCSOS as the dependent was conducted. Using the Bonferroni adjustment, the omnibus test for the group status was significant ($F_{(3,688)} = 5.211$, p = .000 using Wilk's criterion, eta squared = 0.044).

Univariate follow-up tests were significant for the empirical factors of Empirical Self-reflection (ESR) (Factor 1) ($F_{(3,688)} = 4.400$, p = .004), Empirical Physical Space (EPS) (Factor 2) ($F_{(3,688)} = 8.420$, p = .000), Empirical Planning Time (EPT) (Factor 4) ($F_{(3,688)} = 13.131$, p = .000), Empirical Proximity Relationships (EPR)(Factor 5) ($F_{(3,688)} = 5.430$, p = .001, and Empirical Advice (EA) (Factor 6) ($F_{(3,688)} = 3.051$, p = .028 (Table 15). The test for Empirical Sequential Time (EST) was not significant. Tukey HSD post-hoc tests revealed significant differences between groups on five of the six subscales. Table 16 reports post-hoc analyses of group status differences and summarizes the effect sizes (ES) for variables..

Thirty post-hoc analyses were conducted. On Factor 1 (ESR), ND students received higher scores than students with LD ($p < 0.048$, ES = .40) and AD/HD ($p = 0.049$, ES = 0.63). Further post-hoc comparisons in this subscale were not significant, as seen in Table 16. However, medium to large effect sizes were apparent for comparisons between LD+AD/HD - LD ($p = .239$, ES = 0.47) and LD+AD/HD - AD/HD ($p = .115$, ES = 0.72), favoring students with LD+AD/HD.

Follow up tests on Factor 2 (EPS) showed that ND students outperformed students with AD/HD ($p = 0.002$, ES = 0.87) and students with LD+AD/HD ($p < 0.003$, ES = 0.80). ND students did not differ from students with LD. Medium effect sizes were found for comparisons between LD - AD/HD ($p = 0.102$, ES = 0.66) and LD - LD+ AD/HD ($p = .126$, ES = 0.54).

On Factor 4 (EPT), students with LD scored higher than all three disability status groups: ND, AD/HD, and LD+AD/HD. No other significant differences were found.

The two final factors had significant differences as well. On Factor 5 (EPR), students with LD outperformed students with AD/HD ($p = 0.045$, ES = 0.65) and students with LD+AD/HD ($p = 0.001$, ES = 0.89). ND students scored higher than students with LD+ AD/HD ($p = 0.023$, ES = 0.66). A small effect size was obtained for the ND - LD comparisons, ES = .35 ($p = .121$).

There was one significant difference for Factor 6 (EA). Students with LD+AD/HD exceeded students with LD ($p = 0.050$, ES = 57). Small effect sizes were obtained from two comparisons: ND-LD (ES = .36, p = .10) and ND - LD+AD/HD ($p = .203$, ES = 0.30).

Summary. Generally, effect sizes confirmed significant differences, and identified other differences. When groups were compared on the empirical subscales, the ND students consistently performed better than students with AD/HD or LD+AD/HD. Two significant differences were noted between ND and students with LD. Students with LD also scored higher than students with AD/HD and LD+AD/HD.

Reliability

Reliability of total and subscale MCSOS scores were established through coefficient alpha and test-retest reliability. The internal consistency reliability of the total scale was .9383. There was a negligible increase if one item was deleted r = .9391). Subscale internal consistency reliability ranged from .81 to .87 on conceptual factors and from .76 to .92 on empirical factors when one item was deleted (see Table 17).

To assess test-retest reliability, thirty-two students were given the MCSOS on two separate occasions one month apart. The test-retest reliability of the total scale was .943. Subscale reliability ranged from .86 to .91 on conceptual factors and from .66 to .91 on empirical factors (see Table 18). The total scale and all subscales except Factor 6 (EA) exceeded the .80 criterion (Sattler, 2001).

CHAPTER V

Discussion

The primary purpose of this study was to determine the construct validity and reliability of the MCSOS. Construct validity was evaluated through a factor analysis and by an analysis of group differences. Reliability was analyzed using coefficient alpha and test-retest methods. Initial evidence was obtained supporting construct validity and reliability. My discussion of the findings will be presented as follows: (a) construct validity, (b) reliability, (c) limitations, and (d) future research.

Construct Validity

Factor Analysis

An exploratory factor analysis was conducted to assess construct validity. Congruence between conceptual and empirical factors provides some evidence of construct validity. The conceptual and empirical subscales did not overlap perfectly; however, strong similarities were noted. Three of the factors (ESR, ESP, EPT) mapped directly on the conceptual subscales of self-reflection, physical space, and time (Figure 3). Of these three, the clearest empirical support was for physical space and self-reflection. Time was clearly represented in Factor 4 (EPT) but time items also loaded on Factor 3 (EST) and Factor 5 (EPR). As would be expected, the conceptual subscales of self-reflection, physical space, and time were highly correlated with the corresponding factors. The correlations were $r = .907$, $r = .974$, and $r = .795$, respectively. These correlations supported the congruence of constructs between the conceptual scales and the empirical factors.

The remaining three factors were composites of the structure and time conceptual subscales. The structure subscale items did not have a clear "home." Structure mapped most strongly onto factor 1 (ESR) and also exhibited a relationship with factor 3 (EST) and factor 6 (EA). Upon reviewing the structure items that loaded on factor 1 (ESR) it is apparent that all eight of these items reflect planning. The items include questions such as "I make long term plans to accomplish assignments," "I develop a plan of action to accomplish activities at the library or lab," and "I make a step - by - step plan to accomplish an assignment" (Table 10).

This result was forecast by the expert's comments on the pilot verison. The experts suggested that structure items may be related to the concept of self-reflection based on self-regulation theory(Hillman, 2002). It appears that structure as initially conceptualized does not reflect a construct separate from self-reflection. The structure subscale and Factor 1 (ESR) are also highly correlated at $r = .857$.

Fourteen of the sixty items on the MCSOS did not load on any factor at .40 or higher. Four structure items, two time items, four physical space items, and four self-reflection items did not load (Table 10). These items were reviewed for common elements or themes, but none were detected. These 14 items were compared to the 12 items on the pilot study that did not load at .40 or higher. Five items – S1, SR26, S40, SR48, SR 50 (Table 10) – did not load in either analysis. Items included: "I revise my plans for completing an assignment when I anticipate a problem" and "When an assignment or test is difficult, I try to get finished quickly." Due to the fact these items did not load in either study, it would be reasonable to drop these items from future versions of the MCSOS measure.

Although a confirmatory factor analysis is needed to evaluate how the conceptual factors relate to empirical factors, the evidence from this study suggests that similar constructs were identified between the conceptual subscales and empirical factors and provides initial evidence of construct validity. However, further analysis of the relationship between conceptual and empirical factors is needed.

Group Differences

A second evaluation of construct validity was through analysis of group differences on academic and group status. As expected, no differences on academic status were obtained (Zimmerman, 2000). Evidence of construct validity was obtained in that the total scale score, three of the four conceptual subscales, and five of the six empirical subscales discriminated between disability groups. However, based on the literature, I expected that ND students would consistently score higher than students with LD and/or AD/HD on all the variables. First, I will discuss differences between ND students and those with disabilities and follow with group differences between students with disabilities.

ND vs LD, ADHD, LD+ADHD

Total Scale. As an initial piece of validation evidence for construct validity, it must be demonstrated that the students with disabilities earned lower scores when compared to their normally achieving peers. Out of three comparisons, one significant difference was found using the total MCSOS score. ND students scored significantly higher than students with AD/HD (*ES* = 0.78). ND students, when compared to students with LD+AD/HD and LD, had a medium (*ES* = 0.55) and small effect size (*ES* = .20),

respectively, but were not statistically different. Overall, students with disabilities achieved lower scores than the ND students.

Conceptual subscale differences. The next critical piece of evidence for construct validity is whether the MCSOS subscale scores demonstrated that the students with disabilities exhibited problems in areas of structure, physical space, time, and self-reflection, when compared to their normally achieving peers (Barkley,1997; Dooling-Liftin; 1997; Steinberg, 1998; Turk & Campbell, 2002; Willis, Hoben, & Myette,1995; Zentall et al., 1993). The omnibus test among group status was significant. Univarate follow-up tests were significant for three of the four conceptual factors of time, physical space and self-reflection, but not structure (Table 15).

Five out of twelve possible comparisons were statistically significant. Other comparisons were not significant, but yielded medium and small effect sizes. All differences favored the ND group. Overall, four of the five significant differences were between ND students and students with AD/HD, or LD+AD/HD. The differences were on the subscales of time, physical space, and self-reflection. These differences support the findings of Barkley (1997, 1998), Cutting and Denckla (2003), Steinberg (1998), Turk and Campbell (2002), and Willis, Hoben, and Myette (1995) who reported students with AD/HD had problems with time, the use of physical space, and self-regulatory tasks. These findings may also suggest that AD/HD may be the driving force in organizational problems, assuming the MCSOS measures organization. These findings are suggestive and provide further support for the validity of the MCSOS.

The fifth significant difference was found on self-reflection between ND students and students with LD. ND students reported more self-regulatory skills than students

with LD, as anticipated (Butler, 1995, 1998a, 2000; Hughes et al., 2002; Swanson, 1990; Zimmerman, 2000). However, differences also were also expected between students with LD and ND on the subscales of structure and time (Dodd et al., 1985). Although other comparisons were not significant, time yielded a small effect size. There are at least two interpretations of these findings: either students in this study with LD do not have organizational problems or the MCSOS is not a valid measure of organization. In order to determine which interpretation is correct, further research needs to be conducted.

Empirical subscale differences. The findings of the empirical factors provide results much like the pattern of findings for the conceptual scales, primary support was for students with AD/HD and LD+AD/HD. Seven out of eighteen comparisons were statistically significant. Other comparisons were not significant, but one medium and five small effect sizes were noted. Differences favored the ND groups. These findings reflect those found for the conceptual scale differences with the majority of differences being between ND students and students with LD+AD/HD and AD/HD.

LD vs. LD+AD/HD vs. AD/HD

Conceptual subscale differences. As part of the group difference analysis, differences between disability groups were also examined. There is little research that directly compares skills of these two groups. The literature reports that all three disability groups have exhibited problems in areas of structure and self-reflection (Barkley,1997; Steinberg, 1998; Turk & Campbell,2002; Zentall et al., 1993). But, there were no specific hypotheses guiding the analyses.

The omnibus test for the group status was significant. Univarate follow-up tests were significant for the conceptual factors of physical space, time, and self-reflection

(Table 15), but structure was not significant. Three out of nine comparisons were statistically significant. Another five comparisons were not significant; five had medium and two had small effect sizes. The differences were on the subscales of time and physical space and favored the students with LD. Interestingly, there were no significant differences between students with AD/HD and LD+AD/HD. This supports the earlier supposition that students with AD/HD, either as a single or dual diagnosis, may experience greater organizational differences to the extent that the MCSOS measures organization.

Interesting, no differences on self-reflection were noted. This result would be expected because self-reflection is a part of self-regulation, and both groups have problems. The literature reports both students with LD and students with LD AD/HD have problems with self-regulation (Butler, 1995, 1998a, 2000; Barkley, 1997b, 1998: Cutting & Denckla, 2003; Zimmerman, 2000).

Empirical subscale differences. The findings of the empirical factors provide results much like the pattern of findings for the conceptual scales, primary support was that students with LD outperformed students with AD/HD and LD+AD/HD. Five out of eighteen comparisons were found statistically significant. Another four were not significant, but had large to medium effect sizes, while one had a small effect size. These findings support the conceptual scale differences, with the majority of differences between LD students and students with LD+AD/HD and AD/HD.

Construct Validity Summary

Overall, these findings provide initial support for construct validity. Several similarities between conceptual subscales and empirical factors, as well as group

differences between sub-sample of students with disabilities, were found. Students with LD did not earn lower scores than ND students. However, keeping in mind that validity is a ongoing process, these results are promising (Messick, 1989)

Reliability

Both internal consistency and test-retest reliability were evaluated. The benchmark of this study to judge reliability was .80 (Sattler, 2001). Internal consistency of the total scale was .93. Conceptual subscales and empirical factor reliabilities ranged from .78 to .91. Test - retest reliability of the total scale, conceptual and empirical subscales was evaluated on a sample of 32 students. The test - retest reliability of the MCSOS total scale was .94, with conceptual subscales and empirical factors reliability ranging from .86 to .91. This exceeds Sattler's reliability recommendations.

Limitations

This study has several limitations. First, students with disabilities in this study self-identified to the university's disability support services. Thus, it is likely that not all students with LD and/or AD/HD participated. Students who self-identify to student services are thought to be different from students with disabilities who do not disclose their disability (Goldhammer & Brinckerhoff, 1992), but very little is known about the differences between these two groups, as it is extremely difficult to study a group who does not want to be identified. Non-identifying students may be different in several ways. They may have learned, or believe they have learned, to compensate for their disability and, therefore, do not need accommodations provided by the disabilities office on campus. Also, these students may be concerned with the stigma of being labeled as having a disability. It is equally possible that students may not be informed about the

support available in the post-secondary setting. It is unknown how students who do not self-identify would affect the results of this study. This sample bias needs to be kept in mind when reviewing the results of this study.

Another potential limitation is that the data are self-report. I can only assume that the data are an accurate reflection of the participants' organizational skills. Other validity evidence is required to assess the connection between reporting and behavior. This would expand the concept of validity to include relevance as discussed by Messick (1998). In addition, there is evidence that students with LD and/or AD/HD do not accurately report their abilities (Barkley, 1998). Often times, these students are not aware they cannot complete certain activities, or that they do them inefficiently. To explore this possibly, the MCSOS might be completed by a friend or parent to provide another perspective on the student's skills.

Implications for Future Research and Practice

Implications for future research will be discussed in relationship to several different topics. First, the addition of identifying information and its strengths will be discussed. Next, future validity research will be described. Third, results and implications for self-regulation theory will be explained. Finally, recommendations as to the use of MCSOS will be offered.

Based on the study, it was apparent that additional questions need to be added to the identifying information to receive a clear picture of the sample. A follow up question to the disability query (Do you have a documented disability?) that asks if the student is registered with the ODA office may help form a picture of students who may not choose to self-identify. With respect to getting better descriptive data, the place of residence

should be better defined (between living at home with parents, friends, or owning your own home for non-traditional students).

For the purpose of this study, an exploratory factor analysis was conducted to examine the nature of the conceptual factors. To further understand the construct validity of this instrument, a confirmatory factor analysis is required. Now that factors have been identified, a confirmatory factor analysis can determine if the factor structure proposed by theory is supported by the data. This analysis can clarify the underlying properties of the measure and provide evidence to guide item selection.

The individuals with LD and/or AD/HD included in this study's may not be representative of all students with high incidence disabilities who pursue post-secondary education They were adults with LD and/or AD/HD who had been admitted to a four-year university and who sought disability support services. It is possible that this group of students with LD do not experience organizational problems for several reasons. These students have stronger academic skills by virtue of previous training at a community college or possibly through their secondary experience. From this perspective, validating the instrument with students in community colleges may expand our understanding of organizational skills. These students may choose to attend community colleges for several reasons: financial, location, programs, and support. In addition to these reasons, some of these students may have more severe difficulties than those students at a four year university, in that community colleges have an have an open door policy, thus not as many requirements for admission. By including these students in a future study, the researcher can increase variability of skills of students with disabilities, in turn maximizing the variance of the sample.

Additional validity studies need to be conducted that ultimately connect behavior with the instrument. An observation and interview study needs to be conducted to evaluate if the information reported by students with LD and/or AD/HD is an accurate reflection of the participants' organizational skills. The study would include interviews and observations of students with LD and/or AD/HD to determine if they their behaviors and habits in their home, school and work place are as they reported them on the MCSOS.

Another study may explore other people's perceptions of students with LD and/or AD/HD's organization. Students with LD and/or AD/HD may not accurately perceive their skills. The researcher could identify significant others, parents and/or friends who know the individual well to complete a parallel form of the MCSOS in an effort to determine if they have a different view of the student's organizational skills.

Self-regulation theory played a supporting role in the development of the MCSOS. The findings are a reflection of self-regulation theory in several ways: factor structure, motivation, and item inclusion. Self-regulation theory consists of three categories or cyclical phases: forethought, performance, and self-reflection (Zimmerman, 1998, 2000; Figure 1) The researcher, based on theory and literature, expected four factors: structure, time, physical space, and self-reflection. The experts forecasted in the pilot study that structure items may be related to the concept of self-reflection based on self-regulation theory(Hillman, 2002). The conceptual subscale of self-refection and structure is strongly evident in factor 1 (ESR) which accounted for the most variance at 22.89%. Structure and self-reflection items were highly correlated. Items in this factor may be related to the concept of self-reflection based on self-regulation theory. It appears

that structure, as initially conceptualized, does not reflect a construct separate from self-reflection. The empirical factors of time are represented in both the self-regulation phases of performance and forethought.

The total variance accounted for by the MCSOS was 41.90%. The instrument may be strengthened by inclusion of more aspects of self-regulation theory. For example, motivation and self-efficacy items were not included on the MCSOS. Either of these aspects may play a role in organizational skills and could be added to the MCSOS instrument.

This study has several implications for self-regulation theory. In the comparison of the empirical factor represented in self-regulation theory, it was apparent that one empirical factor, physical space (ESP), was not represented in self-regulation theory. The empirical factor of physical space, which was fairly strong and accounted for the second greatest amount of variance, does not appear in self-regulation theory. Items in ESP reflect the students ability to arrange objects and assignments within the individual's environment. The findings of this study might extend or modify self-reflection theory in the area of environment. The inclusion of this understanding of environmental issues into self-regulation theory may enhance the understanding of people's self-regulation.

Overall, at this point in the development of the MCSOS scale there is not enough validity evidence to recommend use in practice. However, further use of the MCSOS to evaluate its validity is recommend.

Conclusions

There are several findings from this study. First, the MCSOS total test and subscales are internally consistent. Second, the MCSOS total and subscale scores are

stable across time. Third, evidence in support of construct validity was provided by the similarities of the conceptual subscales and empirical factors. However, validity evidence in support of the structure was weak. Fourth, group difference results provided additional, but limited, support for construct validity. The strongest evidence was group differences between students who had a diagnosis of AD/HD or LD+AD/HD compared to ND or LD.

Surprisingly, there was not a consistent pattern of differences between LD and ND students. Further, students with LD scored higher than AD/HD single or dully diagnosed students. There are at least two interpretations of these findings: either students with LD do not actually experience problems with organization or the MCSOS is not a valid measure of organization. In order to determine which interpretation is correct, further research needs to be conducted. With respect to organization skills of students with LD, it must be remembered that the literature that documented organizational difficulty is based on children and adolescents.

This study contributed to the research in several ways. First, initial construct validity was established in terms of the factor analysis and group differences. Second, the reliability of the total measure, subscales, and empirical factors was demonstrated though internal consistency and test-retest reliability. Third, this study adds to the information known about college students with LD and/or AD/HD. Fourth, this study raises the possibility that students with LD do not experience problems with organizational skills. Teachers, researchers, and parents have attributed difficulty in organization to students with LD, but this may be in fact be a trait of AD/HD not LD.

Appendix A

Tests accepted by ODA for assessing Adolescents and Adults

Aptitude / Cognitive Ability

- Wechsler Adult Intelligence Scale - III (WAIS-III)
- Woodcock-Johnson Psychoeducational Battery - Revised: Tests of Cognitive Ability
- Kaufman Adolescent and Adult Intelligence Test
- Stanford - Binet Intelligence Scale (4^{th} ed.)

Academic Achievement

- Scholastic Abilities Test for Adults (SATA)
- Stanford Test of Academic Skills (TASK)
- Woodcock-Johnson Psychoeducational Battery - Revised: Test of Achievement
- Wechsler Individual Achievement Test (WIAT)

or specific Achievement Test such as

- Nelson-Denny Reading Skills Test
- Stanford Diagnostic Mathematics Test
- Test of Written Language - 3 (TOWL-3)
- Woodcock Reading Mastery Tests - Revised

Appendix B

Items are keyed to constructs in definition:

S = Structure
T = Time
PS = Physical Space
SR = Self-Reflection

Adapted Question from the Child Organization Scale (COS)

2. When I can't find something I need, I get upset.* (PS)

3. After I use something I put it back right away where it belongs. (PS)

4. I show up on time for class or appointments. (T)

5. I follow the plans I make to get assignments completed. (T)

6. My study area is messy.* (PS)

9. I often do not fully consider what I say before I speak. * (S)

10. I don't realize that I have forgotten something until I'm already in class. * (PS)

12. I have trouble remembering where I put things that I need everyday (e.g. keys, student ID, etc.).* (PS)

13. I make plans for what I'm going to do between classes or during free time. (S)

14. I have trouble locating my book and course materials when I need them.* (PS)

15. I make plans for what I am going to do after class. (S)

20. I have difficulty getting to classes or appointments on time. * (T)

22. I start projects, but I have a hard time finishing them. * (T)

24. My personal belongings (e.g. clothes, living space) are neat and organized. (PS)

25. I do my assignments but can't find them when they are due. * (PS)

27. I have a system for filing my assignments so I can find them quickly. (PS)

29. I am one of the first people to be at a meeting place with friends. (T)

34. I put my books and course materials in the same place when I return home from class. (PS)

35. I lose things. * (PS)

37. I have a plan for deciding which assignment to do first. (S)

39. When I have several things to do in a day, I make a lists or put notes around. (S)

40. I forget to do daily living tasks. (e.g.: keeping appointments, meeting social obligations, paying bills) .* (T)

42. Other people put things where I can't find them. * (PS)

43. Other people lose my things. * (PS)

Adult Organization Scale (AOS)

1. I have a specific day each week on which I routinely perform particular tasks or chores. (S)

7. I am a well organized person. (PS)

11. If I have several tasks/chores to complete and very little time in which to do them I usually mentally prioritize (or order) them before starting on the first task/chore. (A)

17. After I have completed several tasks/chores, I feel that I have completed them in the least amount of time possible. (T)

18. If I have several tasks/chores to complete and very little time in which to do them I usually give myself a time limit for each task before starting on the first task/chore. (T)

23. When I am given several tasks or chores to complete within a day, I like to make a list of the order in which I will perform them. (S)

26. If I have several tasks/chores to complete and very little time in which to do them I usually make a list of the order in which to perform them before starting on the first task /chore. (S)

28. I have specific places for most of the objects in my home so that I can find them immediately. (PS)

30. After I use a tool (e.g. pencil, stapler, kitchen utensil) I return it to its proper place right
away. (PS)

32. When I have several ideas I have difficulty communicating them in a way that makes sense to others. * (S)

38. When thinking about performing a new task/chore, I try to think ahead about possible problems. (S)

41. I have difficulty organizing my thoughts in a logical order. * (S)

Author Developed

8. I have an area specifically for study. (PS)

16. I make long term plans to accomplish assignments. (S)

19. I schedule and plan study time for tests. (S)

21. I ask advice from other classmates about time needed to complete assignments. (S)

31. I do not schedule enough time to complete assignments or activities. * (T)

33. I use a daily calender. (T)

36. I have a plan of action to accomplish activities at the library or lab. (S)

44. I ask advice from others about how they approach an assignment. (T)

45. When I have difficulty completing tasks I think about how I can perform them more effectivity. (SR)

46. When I am completing a task, I monitor the amount of time that I take to complete the
activity. (SR)

47. When I plan a task/activity, I think about how I performed the last time I did something
similar. (SR)

48. When I am doing work on an activity, I change what I am doing. (SR)

49. I evaluate how successful my actions were when an activities is completed. (SR)

50. I often reflect on my thinking when a task / project has ended. (SR)

51. When I am doing poorly on a task, I try to get finished quickly.* (SR)

52. I make judgements on wether or not to attempt a task/project bases on previous experience. (SR)

53. I evaluate the environment in which I complete a task/project to make judgements on how to
attempt similar activities in the future. (SR)

54. When I fail to complete a task/project on time, I attribute it to the process I used to completed the task/project. (SR)

55. When I fail to complete a task/project on time, I attribute it to ability.* (SR)

* reverse coded; a high score is equivalent to always

Appendix C

Please circle:

Classification: Freshman
Sophomore

Gender: Female
Male

Race: African American
American Indian
Asian
Caucasian
Hispanic
Other

Do you have documented disability:
Yes / No

Age: _____

If yes, circle all that apply:
attention deficit disorder
attention deficit hyperactivity disorder
learning disability
physical disability
other

College / High School
GPA: _____

SAT / ACT: _____

Major: _____

Mother's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post graduate
Masters (completed)
Post - Masters

Fathers highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post graduate
Masters (completed)
Post - Masters

	Never	Hardly ever	Some-times	Usually	Always
1. I have a specific day each week on which I routinely perform particular tasks or chores.	1	2	3	4	5
2. When I can't find something I need, I get upset.	1	2	3	4	5
3. After I use something I put it back right away where it belongs.	1	2	3	4	5
4. I show up on time for class or appointments.	1	2	3	4	5
5. I follow the plans I make to get assignments completed.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
6. My study area is messy.	1	2	3	4	5
7. I am a well organized person.	1	2	3	4	5
8. I have an area specifically set aside for study.	1	2	3	4	5
9. I often do not fully consider what I say before I speak.	1	2	3	4	5
10. I don't realize that I have forgotten something until I'm already in class.	1	2	3	4	5
11. If I have several tasks/chores to complete and very little time in which to do them I usually mentally prioritize (or order) them before starting on the first task/chore.	1	2	3	4	5
12. I have trouble remembering where I put things that I need everyday (e.g. keys, student ID, etc.).	1	2	3	4	5
13. I make plans for what I'm going to do between classes or during free time.	1	2	3	4	5
14. I have trouble locating my book and course materials when I need them.	1	2	3	4	5
15. I make plans for what I am going to do after class.	1	2	3	4	5
16. I make long term plans to accomplish assignments.	1	2	3	4	5
17. After I have completed several tasks/chores, I feel that I have completed them in the least amount of time possible.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
18. If I have several tasks/chores to complete and very little time in which to do them I usually give myself a time limit for each task before starting on the first task/chore.	1	2	3	4	5
19. I schedule and plan study time for tests.	1	2	3	4	5
20. I have difficulty getting to classes or appointments on time.	1	2	3	4	5
21. I ask advice from other classmates about how much time they needed to complete assignments.	1	2	3	4	5
22. I start projects, but I have a hard time finishing them.	1	2	3	4	5
23. When I am given several tasks or chores to complete within a day, I like to make a list of the order in which I will perform them.	1	2	3	4	5
24. My personal belongings (e.g. clothes, living space) are neat and organized.	1	2	3	4	5
25. I do my assignments but can't find them when they are due.	1	2	3	4	5
26. If I have several tasks/chores to complete and little time in which to do them I usually make a list of the order in which to perform them before starting on the first task /chore.	1	2	3	4	5
27. I have a system for filing my assignments so I can find them quickly.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
28. I have specific places for most of the objects in my home so that I can find them immediately.	1	2	3	4	5
29. I am one of the first to arrive at a meeting place with friends.	1	2	3	4	5
30. After I use a tool (e.g., pencil, stapler, kitchen utensil) I return it to its proper place right away.	1	2	3	4	5
31. I do not schedule enough time to complete assignments or activities.	1	2	3	4	5
32. When I have several ideas I have difficulty communicating them in a way that makes sense to others.	1	2	3	4	5
33. I use a daily calender.	1	2	3	4	5
34. I put my books and course materials in the same place when I return home from class.	1	2	3	4	5
35. I lose things.	1	2	3	4	5
36. I have a plan of action to accomplish activities at the library or lab.	1	2	3	4	5
37. I have a plan for deciding which assignment to do first.	1	2	3	4	5
38. When thinking about performing a new task/chore, I try to think ahead about possible problems.	1	2	3	4	5
39. When I have several things to do in a day, I make lists or put notes around.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
40. I forget to do daily living tasks. (e.g., keeping appointments, meeting social obligations, paying bills)	1	2	3	4	5
41. I have difficulty organizing my thoughts in a logical order.	1	2	3	4	5
42. Other people put things where I can't find them.	1	2	3	4	5
43. Other people lose my things.	1	2	3	4	5
44. I ask advice from others about how they approach an assignment.	1	2	3	4	5
45. When I have difficulty completing tasks I think about how I can perform them more effectivity.	1	2	3	4	5
46. When I am completing a task, I monitor the amount of time that I take to complete the activity.	1	2	3	4	5
47. When I plan a task/activity, I think about how I performed the last time I did something similar.	1	2	3	4	5
48. When I am doing work on an activity, I change what I am doing.	1	2	3	4	5
49. I evaluate how successful my actions were when an activities is completed.	1	2	3	4	5
50. I often reflect on my thinking when a task / project has ended.	1	2	3	4	5
51. When I am doing poorly on a task, I try to get finished quickly.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
52. I make judgements on wether or not to attempt a task/project bases on previous experience.	1	2	3	4	5
53. I evaluate the environment in which I complete a task/project to make judgements on how to attempt similar activities in the future.	1	2	3	4	5
54. When I fail to complete a task/project on time, I attribute it to the process I used to completed the task/project.	1	2	3	4	5
55. When I fail to complete a task/project on time, I attribute it to ability.	1	2	3	4	5

Appendix D

Deborah Butler

Donald Deshler

Karen Harris

Ellen Hart

Bob Reid

Paul Pintrich

Michael Pressley

Appendix E

Items deleted based on expert opinion

9. I often do not fully consider what I say before I speak.

41. I have difficulty organizing my thoughts in a logical order.

32. When I have several ideas I have difficulty communicating them in a way that makes sense to others.

42. Other people put things where I can't find them.

43. Other people lose my things.

Item deleted based on change of focus:

24. My personal belongings (e.g. clothes, living space) are neat and organized

Appendix F

Added Items:

When faced with a deadline, I often break down the assignment into parts.

I make a step-by-step plan to accomplish an assignment.

I find it useful to talk with others to decide how to complete an assignment.

After developing a plan to accomplish a assignment, I changed it based on possible problems I might encounter.

After developing a plan to complete an assignment, I examine my plan and anticipated possible problems.

I use a calender or planner to schedule time to complete tasks.

I do not get projects started on time.

I leave things to the last minute.

I have difficulty following through on the plans I make.

Once I make my plan, I follow it.

When I fail to complete a project on time, it's because I do not give myself enough time.

When I am going work on an assignment, I change my approach if I am not meeting my goals.

I evaluate how successfully my time was spent when I finish a project.

I evaluate if my goals when an activity is completed.

Appendix G

Adult Organizational Scale - College - Version 2 (AOS-C2)

Please circle:

Classification: Freshman
Sophomore

Gender: Female
Male

Race: African American
American Indian
Asian
Caucasian
Hispanic
Other

Do you have documented disability:
Yes / No

Age: _____

If yes, circle all that apply:
attention deficit disorder
attention deficit hyperactivity disorder
learning disability
physical disability
other

College / High School GPA: _____

SAT / ACT: _____

Major: _____

Mother's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post-graduate
Masters (completed)
Post - Masters

Father's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post-graduate
Masters (completed)
Post - Masters

	Never	Hardly ever	Some-times	Usually	Always
1. After developing a plan to accomplish an assignment, I change it based on possible problems I might encounter.	1	2	3	4	5
2. When I have several things to do in a day, I make a list or put notes around.	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
3.	I find it useful to talk with others to decide how to complete an assignment.	1	2	3	4	5
4.	I develop a plan of action to accomplish activities at the library or lab.	1	2	3	4	5
5.	I have specific places for most of the objects in my home so that I can find them immediately.	1	2	3	4	5
6.	I ask advice from other classmates about time needed to complete assignments	1	2	3	4	5
7.	I don't realize that I have forgotten something until I'm already in class.	1	2	3	4	5
8.	I leave things to the last minute.	1	2	3	4	5
9.	I am one of the first people to be at a meeting place with friends.	1	2	3	4	5
10.	When faced with a deadline, I break down the assignment into parts.	1	2	3	4	5
11.	I have trouble remembering where I put things that I need everyday (e.g. pencils, school supplies, books, notebooks, etc.).	1	2	3	4	5
12.	If I have assignments/papers to complete and very little time in which to do them, I mentally prioritize (or order) them before starting on the first task.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
13. I reflect on my plan of action after I complete a project	1	2	3	4	5
14. After I use something, I put it back where it belongs.	1	2	3	4	5
15. When I am given several assignments to complete in a day, I like to make a list of the order in which I will perform them.	1	2	3	4	5
16. I evaluate the success of my actions when an activity is completed.	1	2	3	4	5
17. I follow the plans I make to get assignments completed.	1	2	3	4	5
18. When I have some free time, I make plans to accomplish assignments.	1	2	3	4	5
19. I am able to complete an assignment in a reasonable amount of time.	1	2	3	4	5
20. I lose things.	1	2	3	4	5
21. I have difficulty following through on the plans I make.	1	2	3	4	5
22. When I fail to complete a project on time, it is because I do not give myself enough time.	1	2	3	4	5
23. When thinking about performing a new task, I try to identify possible problems before I begin.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
24. If I have several tasks to complete and very little time in which to do them, I usually give myself a time limit for each task before beginning my work.	1	2	3	4	5
25. I have an area specifically for study.	1	2	3	4	5
26. When an assignment or test is difficult, I try to get finished quickly.	1	2	3	4	5
27. After I use a tool (e.g. pencil, stapler) I return it to its proper place right away.	1	2	3	4	5
28. I start projects, but I have a hard time finishing them.	1	2	3	4	5
29. I am a well organized person.	1	2	3	4	5
30. I put my books and course materials in the same place when I return home from class.	1	2	3	4	5
31. After developing a plan to complete an assignment, I examine my plan and anticipate possible problems.	1	2	3	4	5
32. I make a step - by - step plan to accomplish an assignment.	1	2	3	4	5
33. I evaluate how successfully my time was spent when I finish a project.	1	2	3	4	5
34. When I finish a project, I think about how I could do it better next time.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
35. I use a daily calender to keep track of assignments.	1	2	3	4	5
36. Once I make my plan, I follow it.	1	2	3	4	5
37. I have trouble locating my book and course materials when I need them.	1	2	3	4	5
38. I have difficulty getting to classes on time.	1	2	3	4	5
39. When I fail to complete a project on time, it is because I used a faulty plan.	1	2	3	4	5
40. I make plans for what I am going to do after class.	1	2	3	4	5
41. I ask advice from others about how they approach an assignment.	1	2	3	4	5
42. When I have difficulty completing tasks, I think about how I can perform them more effectively.	1	2	3	4	5
43. My study area is cluttered.	1	2	3	4	5
44. For each class, I have a specific day each week that I use to prepare for that class.	1	2	3	4	5
45. When I plan a task, I think about how I accomplished it the last time I did something similar.	1	2	3	4	5
46. I show up on time for class.	1	2	3	4	5
47. I am able to prioritize my assignments.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
48. When I fail to complete a project on time, it is because of my poor ability	1	2	3	4	5
49. I do not schedule enough time to complete assignments or activities.	1	2	3	4	5
50. When I am doing work on an assignment, I change my approach if I am not meeting my goals.	1	2	3	4	5
51. I make judgements on whether or not to attempt a project based on previous experience.	1	2	3	4	5
52. I plan and schedule study time for tests.	1	2	3	4	5
53. I do not get projects started on time.	1	2	3	4	5
54. When I am completing a task, I monitor the amount of time that I take to complete it.	1	2	3	4	5
55. I do my assignments but can't find them when they are due.	1	2	3	4	5
56. When I am doing work on an assignment, I monitor whether or not I am reaching my goal.	1	2	3	4	5
57. I have a system for filing my assignments so I can find them quickly. (PS)	1	2	3	4	5
58. I make long term plans to accomplish assignments.	1	2	3	4	5
59. I use a calender or planner to schedule time to complete tasks.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
60. I evaluate if I met my goals when an activity is completed.	1	2	3	4	5

Appendix H

Measure of College Students' Organizational Skills (MCSOS)

ID number: _____ - Last 5 digits of your social security number

Please circle:

Classification: Freshman
Sophomore
Junior
Senior

Gender: Female
Male

Race: African American
American Indian
Asian
Caucasian
Hispanic
Other

Do you have documented disability:
Yes / No

Age: _____

If yes, circle all that apply:
attention deficit disorder
attention deficit hyperactivity disorder
learning disability
physical disability
other

College / High School GPA: _____

SAT / ACT: _____

Major: _____

Mother's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post-graduate
Masters (completed)
Post - Masters

Father's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post-graduate
Masters (completed)
Post - Masters

I Live:
In campus housing
Off campus at home
Off campus with friends
Other: _____

	Never	Hardly ever	Some-times	Usually	Always
1. I revise my plans for completing an assignment when I anticipate a problem.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
2. When I have several things to do in a day, I make a list or put notes around.	1	2	3	4	5
3. I talk with others to decide how to complete an assignment.	1	2	3	4	5
4. I develop a plan of action to accomplish activities at the library or lab.	1	2	3	4	5
5. I have specific places for most of the objects in my home so that I can find them immediately.	1	2	3	4	5
6. I ask advice from other classmates about time needed to complete assignments	1	2	3	4	5
7. I don't realize that I have forgotten something until I'm already in class.	1	2	3	4	5
8. I leave things to the last minute.	1	2	3	4	5
9. I am one of the first people to be at a meeting place with friends.	1	2	3	4	5
10. When faced with a deadline, I break down the assignment into parts.	1	2	3	4	5
11. I have trouble remembering where I put things that I need everyday (e.g. pencils, school supplies, books, notebooks, etc.).	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
12. If I have assignments/papers to complete and very little time in which to do them, I mentally prioritize (or order) them before starting on the first task.	1	2	3	4	5
13. I reflect on my plan of action after I complete a project	1	2	3	4	5
14. After I use something, I put it back where it belongs.	1	2	3	4	5
15. When I am given several assignments to complete in a day, I like to make a list of the order in which I will perform them.	1	2	3	4	5
16. I evaluate the success of my actions when an activity is completed.	1	2	3	4	5
17. I follow the plans I make to get assignments completed.	1	2	3	4	5
18. When I have some free time, I make plans to accomplish assignments.	1	2	3	4	5
19. I am able to complete an assignment in a reasonable amount of time.	1	2	3	4	5
20. I lose things.	1	2	3	4	5
21. I have difficulty following through on the plans I make.	1	2	3	4	5
22. When I fail to complete a project on time, it is because I do not give myself enough time.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
23. When thinking about performing a new task, I try to identify possible problems before I begin.	1	2	3	4	5
24. If I have several tasks to complete and very little time in which to do them, I usually give myself a time limit for each task before beginning my work.	1	2	3	4	5
25. I have an area specifically for study.	1	2	3	4	5
26. When an assignment or test is difficult, I try to get finished quickly.	1	2	3	4	5
27. After I use a tool (e.g. pencil, stapler) I return it to its proper place right away.	1	2	3	4	5
28. I start projects, but I have a hard time finishing them.	1	2	3	4	5
29. I am a well organized person.	1	2	3	4	5
30. I put my books and course materials in the same place when I return home from class.	1	2	3	4	5
31. After developing a plan to complete an assignment, I examine my plan and anticipate possible problems.	1	2	3	4	5
32. I make a step - by - step plan to accomplish an assignment.	1	2	3	4	5
33. I evaluate how successfully my time was spent when I finish a project.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
34. When I finish a project, I think about how I could do it better next time.	1	2	3	4	5
35. I use a daily calender to keep track of assignments.	1	2	3	4	5
36. Once I make my plan, I follow it.	1	2	3	4	5
37. I have trouble locating my book and course materials when I need them.	1	2	3	4	5
38. I have difficulty getting to classes on time.	1	2	3	4	5
39. When I fail to complete a project on time, it is because I used a faulty plan.	1	2	3	4	5
40. I get academic tasks accomplished the time I have between classes.	1	2	3	4	5
41. I ask advice from others about how they approach an assignment.	1	2	3	4	5
42. When I have difficulty completing tasks, I think about how I can perform them more effectively.	1	2	3	4	5
43. My study area is cluttered.	1	2	3	4	5
44. I have a specific time each week that I use to prepare for each class.	1	2	3	4	5
45. When I plan a task, I think about how I accomplished it the last time I did something similar.	1	2	3	4	5
46. I show up on time for class.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
47. I am able to prioritize my assignments.	1	2	3	4	5
48. When I fail to complete a project on time, it is because of my poor ability	1	2	3	4	5
49. I do not schedule enough time to complete assignments or activities.	1	2	3	4	5
50. If an assignment is taking longer to complete than I expected I change my approach.	1	2	3	4	5
51. I decide ho much effort to devote to an assignment based on pervious experiences with similar tasks..	1	2	3	4	5
52. I plan and schedule study time for tests.	1	2	3	4	5
53. I do not get projects started ahead of time.	1	2	3	4	5
54. I am aware of how much time it is taking to complete a task.	1	2	3	4	5
55. I complete my assignments but can't find them when they are due.	1	2	3	4	5
56. When I am doing work on an assignment, I monitor whether or not I am reaching my goal.	1	2	3	4	5
57. I have a system for filing my assignments so I can find them quickly. (PS)	1	2	3	4	5
58. I make long term plans to accomplish assignments.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
59. I use a calender or planner to schedule time to complete tasks.	1	2	3	4	5
60. I evaluate if I met my goals when an activity is completed.	1	2	3	4	5

Appendix I

Standardized directions for the MCSOS.

Thank you for the opportunity to talk with you today. The following survey was is a research project to developing a questionnaire to measure the organizational ability and skills of college students. Please do not put your name on this survey. The information you provide on this survey will be held in strict confidence. No names will be released in connection with the study. Your participation is voluntary and will have no affect on your grade in this class.

Please enter the last five digits of your social security number for identification purposes. Please fill out the descriptive information at the top of the survey by circling the word that most closely describes you. “Classification” refers to how many hours you have completed which is your classification listing the registrars office, not the number of years you have been attending college. If you are a freshman, please report your grade point average from high school and circle “High School” above GPA. Please circle which ever test applies to you – SAT or ACT – and report the score.

Please be honest when completing the survey. Any answer to this survey does not reflects upon your grades, personality, or ability as a student. When the survey refers to “home,” this is wherever you live. This may be a dorm room, apartment, or home. Please make every effort to answer each and every question. Are there any questions? Thank you, again, for the completion of this survey. Your assistance is greatly appreciated.

Appendix J

Standardized directions for the MCSOS - DSS.

Thank you for this opportunity. The following survey is a research project to developing a questionnaire to measure the organizational ability and skills of college students. Please do not put your name on this survey. The information you provide on this survey will be held in strict confidence. No names will be released in connection with the study. Your participation is voluntary and will have no affect on your services you receive.

Please enter the last five digits of your social security number for identification purposes. Please fill out the descriptive information at the top of the survey by circling the word that most closely describes you. “Classification” refers to how many hours you have completed which is your classification listing the registrars office, not the number of years you have been attending college. If you are a freshman, please report your grade point average from high school and circle “High School” above GPA. Please circle which ever test applies to you – SAT or ACT – and report the score.

Please be honest when completing the survey. Any answer to this survey does not reflects upon your grades, personality, or ability as a student. When the survey refers to “home,” this is wherever you live. This may be a dorm room, apartment, or home. Please make every effort to answer each and every question. If you have any questions, please ask the attendant? Thank you, again, for the completion of this survey. Your assistance is greatly appreciated.

Table 1

Summary of Conceptual Subscale Item Orientation.

Item Number	Item Description
Self - Regulation	
SR13.	I reflect on my plan of action after I complete a project
SR16.	I evaluate the success of my actions when an activity is completed.
SR26.	When an assignment or test is difficult, I try to get finished quickly.
SR33.	I evaluate how successfully my time was spent when I finish a project.
SR34.	When I finish a project, I think about how I could do it better next time.
SR39.	When I fail to complete a project on time, it is because I used a faulty plan.
SR42.	When I have difficulty completing tasks, I think about how I can perform them more effectively.
SR45.	When I plan a task, I think about how I accomplished it the last time I did something similar.
SR48.	When I fail to complete a project on time, it is because of my poor ability
SR49.	I do not schedule enough time to complete assignments or activities.
SR50.	If an assignment is taking longer to complete than I expected I change my approach.
SR51.	I decide ho much effort to devote to an assignment based on pervious experiences with similar tasks..
SR54.	I am aware of how much time it is taking to complete a task.
SR56.	When I am doing work on an assignment, I monitor whether or not I am reaching my goal.
SR60.	I evaluate if I met my goals when an activity is completed.

Physical Space

PS5. I have specific places for most of the objects in my home so that I can find them immediately.

PS7. I don't realize that I have forgotten something until I'm already in class.

PS11. I have trouble remembering where I put things that I need everyday (e.g. pencils, school supplies, books, notebooks, etc.).

PS14. After I use something, I put it back where it belongs.

PS20. I lose things.

PS25. I have an area specifically for study.

PS27. After I use a tool (e.g. pencil, stapler) I return it to its proper place right away.

PS29. I am a well organized person.

PS30. I put my books and course materials in the same place when I return home from class.

PS37. I have trouble locating my book and course materials when I need them.

PS43. My study area is cluttered.

PS55. I complete my assignments but can't find them when they are due.

PS57. I have a system for filing my assignments so I can find them quickly.

Time

T8. I leave things to the last minute.

T9. I am one of the first people to be at a meeting place with friends.

T17. I follow the plans I make to get assignments completed.

T19. I am able to complete an assignment in a reasonable amount of time.

T21. I have difficulty following through on the plans I make.

T22. When I fail to complete a project on time, it is because I do not give myself enough time.

T24. If I have several tasks to complete and very little time in which to do them, I usually
give myself a time limit for each task before beginning my work.

T28. I start projects, but I have a hard time finishing them.

T35. I use a daily calender to keep track of assignments.

T36. Once I make my plan, I follow it.

T38. I have difficulty getting to classes on time.

T41. I ask advice from others about how they approach an assignment.

T46. I show up on time for class.

T49. I do not schedule enough time to complete assignments or activities.

T53. I do not get projects started ahead of time.

T59. I use a calender or planner to schedule time to complete tasks.

Structure

S1. I revise my plans for completing an assignment when I anticipate a problem.

S2. When I have several things to do in a day, I make a list or put notes around.

S3. I talk with others to decide how to complete an assignment.

S4. I develop a plan of action to accomplish activities at the library or lab.

S6. I ask advice from other classmates about time needed to complete assignments

S10. When faced with a deadline, I break down the assignment into parts.

S12. If I have assignments/papers to complete and very little time in which to do them, I mentally prioritize (or order) them before starting on the first task.

S15. When I am given several assignments to complete in a day, I like to make a list of the order in which I will perform them.

S18. When I have some free time, I make plans to accomplish assignments.

S23. When thinking about performing a new task, I try to identify possible problems before I begin.

S31. After developing a plan to complete an assignment, I examine my plan and anticipate possible problems.

S32. I make a step - by - step plan to accomplish an assignment.

S40. I get academic tasks accomplished the time I have between classes.

S44. I have a specific time each week that I use to prepare for each class.

S47. I am able to prioritize my assignments.

S52. I plan and schedule study time for tests.

S58. I make long term plans to accomplish assignments.

Note: S = Structure, T = Time, PS = Physical Space, SR = Self-Reflection as reported on the conceptual scales.

Table 2

Characteristics of Participants by Total Sample and Group Status

	Sample		ND		LD		LD+AD/HD		AD/HD	
Variable	N	%	N	%	N	%	N	%	N	%
Gender										
Male	216	31	184	30	15	34	8	40	8	47
Female	476	69	427	70	29	66	12	60	9	53
Group Status										
Non Disabled	595	86	-	-	-	-	-	-	-	-
Disability	95	14	-	-	-	-	-	-	-	-
LD	44	6	-	-	-	-	-	-	-	-
LD+AD/HD	20	3	-	-	-	-	-	-	-	-
AD/HD	17	3	-	-	-	-	-	-	-	-

Table Continues

PHY	9	1	-	-	-	-	-	-	-	-
Other	7	1	-	-	-	-	-	-	-	-
Academic status										
Freshman	145	21	126	21	10	23	3	15	6	35
Sophomore	163	24	147	24	10	23	3	15	3	18
Junior	172	25	152	25	6	13	13	65	1	6
Senior	212	30	186	30	18	41	1	5	7	41
Race										
African American	126	18	120	20	6	14	-	-	-	-
American Indian	5	1	5	1	-	-	-	-	-	-
Asian	17	2.5	14	2	-	-	-	-	3	18
Caucasian	505	73	439	72	38	86	15	75	13	76
Hispanic	11	1.6	11	2	-	-	-	-	-	-
Other	22	3.2	16	3	-	-	5	25	1	6

Table Continues

Parental Education - Father										
Less than 12 Years	47	7	43	7	2	5	2	16	2	11
High School	167	24	159	27	3	7	3	15	-	-
Some College	162	24	152	25	5	12	2	10	3	18
College (Completed)	177	26	137	23	22	50	9	45	9	53
Some Post-Graduate	19	2.7	18	3	-	-	-	-	1	6
Masters (Completed)	73	10.5	62	10	9	21	-	-	2	12
Post-Masters	34	4.9	30	5	2	5	2	10	-	-
Mother Education										
Less than 12 Years	39	6	33	6	2	5	4	20	-	-
High School	153	22	147	24	5	11	-	-	1	6
Some College	181	26	162	27	13	29	4	20	2	12
College (Completed)	177	25	142	23	20	45	9	45	6	35
Some Post-Masters	26	4	25	4	-	-	-	-	1	6

Table Continues

Masters (Completed)	87	13	77	13	2	5	3	15	5	29
Post-Masters	25	4	21	4	2	5	-	-	2	12
Housing										
Campus Housing	287	42	244	40	24	55	9	45	10	59
Off campus at home	178	26	163	27	13	29	2	10	-	-
Off campus with friends	222	32	199	33	7	16	9	45	7	41
College										
Arts and Letters	117	18	101	18	7	16	5	25	4	24
Bus and Eco Dev	120	18	114	19	3	6	1	5	2	12
Edu and Psy	162	24	140	23	11	25	10	50	5	29
Health	169	25	157	26	10	23	1	5	1	6
Science and Tech	97	15	82	14	7	16	3	15	5	29

Note. LD = Learning Disabilities, LD+AD/HD = Learning Disability and Attention Deficit Hyperactivity Disorder, AD/HD = Attention Deficit Hyperactivity Disorder, ND = Student without Disabilities.

Table 3

Descriptive Statistics by Group Status

Variable		N	Mean	SD
Age		680	22.02	5.16
ACT[a]		561	22.58	3.88
College GPA[a]		640	3.17	.49
LD				
	Age	44	21.61	2.72
	ACT[a]	29	20.03	4.06
	College GPA[a]	35	3.12	.459
LD+AD/HD				
	Age	20	25.00	2.66
	ACT[a]	14	24.36	5.57
	College GPA[a]	20	2.72	.54
AD/HD				
	Age	17	21.94	2.86
	ACT[a]	15	23.53	5.11
	College GPA[a]	16	2.92	.36
ND				
	Age	599	21.95	5.23
	ACT[a]	503	22.65	3.73
	College GPA[a]	569	3.20	.49

Table Continues

Note. N's vary because not all respondents answered all items. LD= Learning Disabilities, GPA = Grade Point Average, LD+AD/HD = Learning Disability and Attention Deficit Hyperactivity Disorder, AD/HD = Attention Deficit Hyperactivity Disorder, ND = Non Disabled.

[a] Scores based on participants' self reports.

Table 4

ANOVA Results for Comparisons Among Disability and Academic Status Groups on Age, College, GPA, and ACT

Variable	df	F	p
Group Status			
Age	3, 676	2.365	.070
College GPA	3, 636	7.98	.000
ACT	3, 557	5.617	.001
Academic Status			
	3, 688	0.307	.820

Table 5

Descriptive Statistics for MCSOS Items

	Mean	Standard Deviation
S1	3.49	.89
S2	3.58	1.31
S3	3.34	.92
S4	3.00	1.05
PS5	3.78	1.04
S6	3.03	1.02
PS7	3.50	.88
T8	2.76	1.02
T9	3.35	1.02
S10	2.99	.95
PS11	3.88	.99
S12	3.76	.94
Sro13	2.74	1.03
PS14	3.58	.92
S15	3.28	1.21
SR16	3.26	1.04
T17	3.49	.84
S18	3.11	1.02
T19	3.78	.73

Table Continues

PS20	3.32	.90
T21	3.54	.74
T22	2.97	1.15
S23	2.93	.93
T24	2.89	1.04
PS25	3.02	1.27
SR26	3.58	1.01
PS27	3.41	1.03
T28	3.65	.93
PS29	3.57	1.07
PS30	3.66	1.12
S31	2.80	.89
S32	2.76	.99
SR33	2.62	1.02
SR34	3.08	1.05
T35	3.49	1.38
T36	3.43	.84
PS37	4.06	.83
T38	3.87	1.08
SR39	3.49	1.00
S40	2.92	.94
T41	3.09	.96

Table Continues

SR42	3.21	.90
PS43	3.29	1.11
S44	2.56	1.06
SR45	3.29	.95
T46	4.16	.92
S47	3.87	.85
SR48	3.89	.97
T49	3.34	.98
SR50	3.18	.80
SR51	3.30	.88
S52	3.56	1.02
T53	3.22	1.06
SR54	3.39	.88
PS55	4.41	.80
SR56	3.07	.98
PS57	3.12	1.30
S58	2.93	1.08
T59	3.36	1.36
SR60	2.99	1.07

Note. S = Structure; T = Time, PS = Physical Space; SR = Self-reflection

Table 6

Pearson Correlation Coefficients for Individual Items

	1	2	3	4	5	6	7	8	9	10	11	12
1. S1	1.00											
2. S2	.290**	1.00										
3. S3	.212**	.196**	1.00									
4. S4	.332**	.314**	.218**	1.00								
5. PS5	.167**	.289**	.092*	.216**	1.00							
6. S6	.132**	.131**	.530**	.208**	.108**	1.00						
7. PS7	.149**	.143**	-.100**	.051	.167**	-.199**	1.00					
8. T8	.199**	.247**	-.043	.207**	.303**	-.103**	.402**	1.00				
9. T9	.110**	.006	-.052	.087*	.150**	-.047	-.188**	.294**	1.00			
10 S10	.204**	.242**	.097*	.324**	.217**	.099**	.173**	.441**	.225**	1.00		
11. PS11	.125**	.124**	.028	.144**	.422**	-.057	.253**	.290**	.108**	.156**	1.00	

Table Continues

	1	2	3	4	5	6	7	8	9	10	11	12
12. S12	.265**	.245**	.126**	.274**	.281**	.083*	.204**	.231**	.130**	.334**	.158**	1.00
13. SR13	.247**	.158**	.199**	.267**	.192**	.189**	.102**	.183**	.052	.302**	.072	.236**
14. PS14	.144*	.206**	.080*	.201**	.535**	.067	.184**	.291**	.159**	.204**	.437**	.254**
15. S15	.274**	.648**	.230**	.379**	.332**	.152**	.131**	.284**	.011	.349**	.158**	.298**
16. SR16	.187**	.178**	.211**	.287**	.219**	.168**	.083*	.165**	.078*	.247**	.154**	.261**
17. T17	.306**	.395**	.115**	.376**	.266**	.126**	.232**	.399**	.160**	.403**	.197**	.360**
18. S18	.324**	.451**	.169**	.398**	.329**	.120**	.213**	.375**	.059	.357**	.176**	.261**
19. T19	.217**	.173**	-.037	.132**	.205**	.006	.204**	.294**	.185**	.263**	.224**	.269**
20. PS20	.103**	.089*	-.016	.060	.294**	-.046	.329**	.323**	.169**	.138**	.554**	.112**
21. T21	.084*	.143**	-.001	.044	.196**	-.083*	.294**	.402**	.221**	.188**	.300**	.154**
22. T22	.058	.011	-.073	.010	.022	-.141**	.177**	.289**	.104**	.081*	.049	.068
23. S23	.289**	.097*	.183**	.285**	.165**	.132**	.135**	.217**	.128**	.316**	.125**	.270**
24. T24	.206**	.242**	.174**	.254**	.259**	.197**	.082*	.207**	.053	.278**	.085*	.240**

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Table Continues

	1	2	3	4	5	6	7	8	9	10	11	12
25. PS25	.101**	.195**	.084*	.265**	.230**	.172**	.154**	.212**	.039	.194**	.092*	.203**
26. SR26	.084*	.078*	.-.019	.073	.026	.-.063	.109**	.144**	-.015	-.009	.089*	.117**
27. PS27	.074	.229**	.112**	.207**	.476**	.052	.200**	.315**	.156**	.165**	.422**	.261**
28. T28	.045	.101**	-.061	.034	.149**	-.089*	.215**	.351**	.185**	.157**	.248**	.155**
29. PS29	.194**	.378**	.112**	.244*	.531**	.057	.332**	.441**	.219**	.290**	.454**	.307**
30. PS30	.155**	.204**	.063	.178**	.503**	.011	.274**	.371**	.126**	.240**	.478**	.273**
31. S31	.322**	.257**	.209**	.357**	.273**	.217**	.194**	.313**	.122**	.359**	.186**	.278**
32. S32	.235**	.415**	.203**	.416**	.290**	.209**	.138**	.339**	.074	.443**	.180**	.276**
33. SR33	.234**	.165**	.243**	.323**	.193**	.200**	.110**	.211**	.056	.280**	.115**	.208**
34. SR34	.205**	0139**	.152**	.281**	.206**	.156**	.083*	.165**	.036	.255**	.108**	.244**
35. T35	.214**	.571**	.151**	.256**	.325**	.100**	.166**	.297**	.084*	.229**	.154**	.183**
36. T36	.217**	.310**	.117**	.283**	.315**	.096*	.197**	.362**	.196**	.312**	.203**	.283**
37. PS37	.082*	.114**	-.037	.020	.365**	-.071	.303**	.295**	.163**	.114**	.577**	.129**

Table Continues

	1	2	3	4	5	6	7	8	9	10	11	12
38. T38	.062	.045	-.036	.063	.146**	-.074	.212**	.378**	.405**	.247**	.223**	.180**
39. SR39	-.024	-.021	-.126**	-.069	.069	-.125**	.196**	.197**	.124	-.005	.157**	.032
40. S40	.069	.075*	-.012	.109**	.055	.072	.054	.103**	.128**	.134**	-.019	.104**
41. T41	.095*	.152**	.586**	.220**	.110**	.658**	-.147**	-.071	-.047	.124**	-.009	.134**
42. SR42	.293**	.207**	.271**	.332**	.231**	.262**	.092*	.164**	.017	.321**	.136**	.329**
43. PS43	.020	.148**	-.009	.199**	.388**	-.017	.247**	.389**	.156**	.212**	.341**	.152**
44. S44	.139**	.232**	.057	.267**	.165**	.111**	.145**	.270**	.147**	.304**	.067	.247**
45. SR45	.264**	.194**	.199**	.317**	.185**	.134**	.124**	.185**	.064	.309**	.126**	.336**
46. T46	.100**	.048	-.007	.090*	.166**	.010	.242**	.327**	.443**	.228**	.203**	.192**
47. S47	.295**	.338**	.124**	.332**	.317**	.070	.318**	.421**	.263**	.324**	.268**	.495**
48. SR48	.019	.049	-.071	-.077*	.028	-.107**	.118**	.098*	.054	.049	.097*	.089*
49. T49	.066	.137**	-.034	.126**	.179**	-.092*	.306**	.487**	.148**	.284**	.228**	.230**
50. SR50	.242**	.197**	.219**	.212**	.123**	.222**	.036	.144**	.115**	.260**	.069	.231**

Table Continues

	1	2	3	4	5	6	7	8	9	10	11	12
51. SR51	.211**	.209**	.220**	.251**	.173**	.165**	.123**	.102**	.061	.246**	.094*	.306**
52. S52	.268**	.376**	.185**	.394**	.273**	.107**	.211**	.366**	.119**	.304*	.181**	.360**
53. T53	.051	.193**	.041	.119**	.227**	-.051	.275**	.489**	.175**	.251**	.191**	.144**
54. SR54	.194**	.126**	.105**	.227**	.129**	.067**	.140**	.163**	.128**	.269**	.128**	.253**
55. PS55	.063	.128**	-.083*	.039	.162**	-.125**	.301**	.256**	.089*	.153**	.314**	.203**
56. SR56	.225**	.165**	.115**	.332**	.111**	.098*	.162**	.209**	.112**	.281**	.131**	.285**
57. PS57	.181**	.227**	.090*	.284**	.375**	.041	.255**	.370**	.136**	.319**	.325**	.280**
58. S58	.259**	.393**	.159**	.400**	.285**	.122**	.259**	.474**	.148**	.466**	.176**	.363**
59. T59	.231**	.539**	.182**	.280*	.315**	.131**	.171**	.311**	.056	.260**	.113**	.227**
60. SR60	.230**	.221**	.267**	.328**	.255**	.208**	.140**	.234**	.074	.302**	.152**	.261**

* Correlation is significant at the 0.05 level (two-tailed).

** Correlation is significant at the 0.01 level (two-tailed).

Note. S = Structure, T = Time, PS = Physical Space, SR = Self-reflection.

	13	14	15	16	17	18	19	20	21	22	23	24
1. S1												
2. S2												
3. S3												
4. S4												
5. S5												
6. S6												
7. PS7												
8. T8												
9. T9												
10 S10												
11. PS11												
12. S12												
13. SR13	1.00											

Table Continues

	13	14	15	16	17	18	19	20	21	22	23	24
14. PS14	.219**	1.00										
15. S15	.267**	.277**	1.00									
16. SR16	.462**	.226**	.285**	1.00								
17. T17	.280**	.335**	.487**	.333**	1.00							
18. S18	.303**	.312**	.477**	.332**	.494**	1.00						
19. T19	.176**	.272**	.123**	.201**	.293**	.247**	1.00					
20. PS20	.051	.392**	.179**	.070	.232**	.161**	.152**	1.00				
21. T21	.047	.240**	.193**	.120**	.280**	.154**	.263**	.376**	1.00			
22. T22	.011	.020	.007	.026	.099**	.077*	.115**	.126**	.229**	1.00		
23. S23	.397**	.201**	.192**	.402**	.296**	.226**	.178**	.062	.088*	.015	1.00	
24. T24	.305**	.174**	.302**	.262**	.303**	.314**	.129**	.060**	.083*	.020	.328**	1.00
25. PS25	.239**	.204**	.230*	.222**	.259**	.278**	.133**	.068	.070	.078*	.236*	.310**
26. SR26	.002	.089*	.095*	.105**	.119**	.101**	.048	.059	.167**	.083*	.007	.013

Table Continues

	13	14	15	16	17	18	19	20	21	22	23	24
27. PS27	.211**	.740**	.292**	.246**	.368**	.329**	.241**	.392**	.236**	.094*	.182**	.149**
28. T28	-.015	-.195**	-.139**	.066	.236**	.127**	.253**	.310**	.495**	.219**	.068**	.049
29. PS29	.190**	.575**	.413**	.185**	.394**	.366**	.286**	.485**	.369**	.123**	.157**	.193**
30. PS30	.124**	.608**	.294**	.173**	.361**	.290**	.223**	.400**	.260**	.082*	.179**	.168**
31. S31	.492**	.307**	.349**	.429**	.394**	.445**	.236**	.171**	.151**	-.005	.548**	.425**
32. S32	.403**	.277**	.529**	.303**	.457**	.469**	.184**	.172**	.162**	.054	.349**	.435**
33. SR33	.534**	.197**	.285**	.529**	.319**	.360**	.103**	.103**	.042	-.004	.441**	.446**
34. SR34	.498**	.205**	.183**	.536**	.237**	.325**	.133**	-.012	.003	.023	.441**	.307**
35. T35	.149**	.274**	.483**	.154**	.311**	.416**	.156**	.099**	.162**	.030	.049	.196**
36. T36	.277**	.354**	.357**	.250**	.507**	.387**	.291**	.176**	.364**	.121**	.288**	.256**
37. PS37	.056	.498**	.135**	.121**	.188**	.164**	.210**	.542**	.310**	.118**	.022	.059
38. T38	.029	.207**	.065	.036	.180**	.120**	.199**	.269**	.278**	.132**	.038	.082*
39. SR39	-.069	.114**	-.045	-.082*	-.036	-.031	.157**	.230**	.282**	.374**	-.047	-.012

Table Continues

	13	14	15	16	17	18	19	20	21	22	23	24
40. S40	.141**	.073*	.073	.049	.155**	.088*	.086*	.041	.069	.104**	.096*	.123**
41. T41	.192**	.076*	.200**	.202**	.127**	.149**	-.005	-.043	-.087*	-.101**	.166**	.205**
42. SR42	.456**	.278**	.284**	.467**	.318**	.342**	.091*	.058	-.011	.027	.482**	.363**
43. PS43	.094*	.393**	.196**	.150**	.237**	.210**	.219**	.391**	.307**	.142**	.089*	.131**
44. S44	.305**	.221**	.278**	.234**	.230**	.350**	.164**	.100**	.108**	.115**	.290**	.298**
45. SR45	.315**	.204**	.248**	.371**	.328**	.344**	.219**	.059	.108**	.073**	.401**	.315**
46. T46	.060	.224**	.028	.075*	.189**	.124**	.284**	.216**	.225**	.114**	.093*	.096*
47. S47	.241**	.392**	.356**	.219**	.453**	.424**	.360**	.230**	.298**	.146**	.219**	.243**
48. SR48	-.011	.056	.037	.000	-.013	-.008	.186**	.081*	.210**	.159**	-.045	-.054
49. T49	.019	.164**	.193**	.074	.244**	.236**	.276**	.278**	.403**	.349**	.060	.126**
50. SR50	.269**	.117**	.211**	.245**	.253**	.182**	.203**	-.084*	.021	-.023	.276**	.251**
51. SR51	.275**	.163**	.207**	.299**	.314**	.288**	.152**	.010	-.007	-.02	.354**	.280**
52. S52	.305**	.308**	.400**	.266**	.450**	.464**	.220**	.158**	.230**	.111*	.214**	.377**

Table Continues

	13	14	15	16	17	18	19	20	21	22	23	24
53. T53	.124**	.211**	.236**	.159**	.274**	.247**	.226**	.212**	.304**	.214**	.084*	.003
54. SR54	.207**	.219**	.186**	.234**	.338**	.238**	.138**	.144**	.149**	.028	.275**	.262**
55. PS55	-.037	.134**	.126**	.050	.159**	.143**	.217**	.252**	.262**	.124**	-.17*	.046
56. SR56	.339**	.181**	.223**	.381**	.371**	.294**	.081*	.093*	.160**	.046	.421**	.330**
57. PS57	.229**	.405**	.309*	.212**	.368**	.319**	.229**	.272**	.200**	.154**	.274**	.228**
58. S58	.356**	.323**	.414**	.280**	.479**	.454**	.288**	.175**	.245**	.110**	.369**	.332**
59. T59	.196**	.289**	.443**	.202**	.364**	.420**	.202**	.094*	.175**	.094*	.117**	.208**
60. SR60	.495**	.276**	.280**	.562**	.410**	.364**	.191**	.092**	.147**	.050	.418**	.356**

	25	26	27	28	29	30	31	32	33	34	35	36
1. S1												
2. S2												
3. S3												
4. S4												
5. PS5												
6. S6												
7. PS7												
8. T8												
9. T9												
10 S10												
11. PS11												
12. S12												
13. SR13												

Table Continues

	25	26	27	28	29	30	31	32	33	34	35	36
14. PS14												
15. S15												
16. SR16												
17. T17												
18. S18												
19. T19												
20. PS20												
21. T21												
22. T22												
23. S23												
24. T24												
25. PS25	1.00											
26. SR26	.043	1.00										

Table Continues

	25	26	27	28	29	30	31	32	33	34	35	36
27. PS27	.260**	.095*	1.00									
28. T28	.075*	.193**	.210**	1.00								
29. PS29	.225**	.107**	.526**	.350**	1.00							
30. PS30	.230**	.042	.587**	.227**	.576**	1.00						
31. S31	.307**	.049	.338**	.145**	.305**	.257**	1.00					
32. S32	.270**	-.003	.279**	.142**	.344**	.268**	.570**	1.00				
33. SR33	.292**	.042	.222**	.017	.189**	.212**	.542**	.469**	1.00			
34. SR34	.242**	.115**	.209**	-.021	.109**	.186**	.470**	.354**	.565**	1.00		
35. T35	.188**	.099**	.327**	.123**	.309**	.281**	.224**	.301**	.187**	.178**	1.00	
36. T36	.242**	.085*	.362**	.331**	.407**	.318**	.356**	.401**	.248**	.260**	.304**	1.00
37. PS37	.066	.107**	.462**	.328**	.504**	.537**	.126**	.114**	.080*	.047	.149**	.211**
38. T38	.027	.049	.186**	.293**	.253**	.266**	.124**	.146**	-.002	.025	.071	.210**
39. SR39	.039	.085*	.103**	.300**	.185**	.062	.009	-.052	-.092*	-.097*	-.031	.097*

Table Continues

	25	26	27	28	29	30	31	32	33	34	35	36
40. S40	.134**	-.081*	.117**	.041	.080*	.076*	.132**	.158**	.103**	.029	.099**	.125**
41. T41	.181**	-.056	.061	-.058	.083*	.033	.254**	.205**	.244**	.180**	.100**	.139**
42. SR42	.241**	.063	.238**	.013	.189**	.244**	.503**	.382**	.507**	.527**	.171**	.305**
43. PS43	.157**	.154**	.394**	.387**	.535**	.442**	.221**	.215**	.140**	.066	.181**	.189**
44. S44	.297**	-.016	.196**	.110**	.224**	.179**	.384**	.381**	.319**	.318**	.170**	.259**
45. SR45	.255**	.055	.217**	.049	.204**	.209**	.360**	.309**	.367**	.406**	.148**	.352**
46. T46	.094*	.013	.183**	.261**	.251**	.213**	.156**	.128**	.019	.080*	.102**	.277**
47. S47	.217**	.114**	.388**	.222**	.468**	.390**	.344**	.376**	.234**	.218**	.346**	.446**
48. SR48	-.007	.147**	.067	.258**	.099**	.086*	.020	.036	-.043	-.020	.025	.074
49. T49	.146**	.143**	.154**	.468**	.308**	.244**	.161**	.218**	.083*	-.002	.142**	.297**
50. SR50	.175**	.-.011	.140**	-.013	.138**	.119**	.289**	.299**	.248**	.261**	.176**	.224**
51. SR51	.170**	.020	.188**	.034	.211**	.191**	.371**	.309**	.317**	.333**	.170**	.252**
52. S52	.376**	.156**	.342**	.157**	.395**	.355**	.406**	.445**	.324**	.291**	.350**	.440**

Table Continues

	25	26	27	28	29	30	31	32	33	34	35	36
53. T53	.116**	.044	.213**	.321**	.340**	.268**	.161**	.246**	.091*	.110**	.207**	.278**
54. SR54	.232**	.105**	.185**	.139**	.236**	.180**	.274**	.283**	.309**	.209**	.152**	.267**
55. PS55	-.027	.216**	.171**	.302**	.267**	.239**	.050	.054	-.006	.000	.130**	.196**
56. SR56	.256**	.079*	.208**	.092*	.234**	.217**	.445**	.368**	.457**	.410**	.138**	.310**
57. PS57	.207**	.084*	.425**	.248**	.489**	.453**	.331**	.341**	.245**	.222**	.322**	.308**
58. S58	.328**	.073	.351**	.211**	.414**	.338**	.476**	.517**	.381**	.323**	.420**	.420**
59. T59	.217**	.081*	.319**	.123**	.406**	.293**	.247**	.357**	.227**	.187**	.827**	.335**
60. SR60	.274**	.120**	.315**	.102**	.267**	.271**	.564**	.453**	.607**	.520**	.277**	.374**

	37	38	39	40	41	42	43	44	45	46	47	48
1. S1												
2. S2												
3. S3												
4. S4												
5. PS5												
6. S6												
7. PS7												
8. T8												
9. T9												
10 S10 .												
11. PS11												
12. S12												
13. SR13												

Table Continues

	37	38	39	40	41	42	43	44	45	46	47	48
14. PS14												
15. S15												
16. SR16												
17. T17												
18. S18												
19. T19												
20. PS20												
21. T21												
22. T22												
23. S23												
24. T24												
25. PS25												
26. SR26												

Table Continues

	37	38	39	40	41	42	43	44	45	46	47	48
27. PS27												
28. T28												
29. PS29												
30. PS30												
31. S31												
32. S32												
33. SR33												
34. SR34												
35. T35												
36. T36												
37. PS37	1.00											
38. T38	.316**	1.00										
39. SR39	.217**	.188**	1.00									

Table Continues

	37	38	39	40	41	42	43	44	45	46	47	48
40. S40	.002	.088*	-.027	1.00								
41. T41	-.083*	-.053	-.173**	.132**	1.00							
42. SR42	.113**	.086*	-.090*	.195**	.415*	1.00						
43. PS43	.407**	.269**	.217**	.035	-.002	.059	1.00					
44. S44	.040	.161**	-.004	.157**	.131**	.302**	.111**	1.00				
45. SR45	.095*	.045	-.037	.128**	.256**	.516**	.076*	.335**	1.00			
46. T46	.269**	.747**	.175**	.096*	.023	.095*	.198**	.178**	.076*	1.00		
47. S47	.302**	.350**	.148**	.174**	.096*	.316*	.237**	.297**	.340**	.413**	1.00	
48. SR48	.186**	.180**	.309**	.045	-.145**	.004	.104**	-.048	.053	.135**	.120**	1.00
49. T49	.280**	.327**	.325**	.006	-.070	.094*	.325**	.172**	.108**	.266**	.326**	.240**
50. SR50	-.022	.115**	-.134**	.126**	.222**	.298**	-.006	.224**	.272**	.148**	.263**	-.019
51. SR51	.043	.057	-.032	.035	.254**	.458**	.063	.221**	.459**	.083*	.307**	.012
52. S52	.199**	.175**	.068	.110**	.157**	.337**	.232**	.380**	.368**	.207**	.519**	.057

Table Continues

	37	38	39	40	41	42	43	44	45	46	47	48
53. T53	.252**	.308**	.218**	-.008	.002	.097*	.308**	.188**	.123**	.248**	.303**	.091*
54. SR54	.052	.086*	.006	.051	.103**	.294**	.123**	.180**	.248**	.129**	.319**	-.026
55. PS55	.353**	.248**	.169**	-.067	-.107**	.090*	.222**	-.005	.097*	.207**	.261**	.228**
56. SR56	.056	.100**	-.081*	.128**	.147**	.440**	.118**	.306**	.360**	.111**	.311**	.016**
57. PS57	.320**	.153**	.089*	.159**	.060	.318**	.374**	.327**	.261**	.155**	.410**	.051
58. S58	.146**	.170**	.069	.216**	.152**	.394**	.258**	.421**	.344**	.169**	.482**	.017**
59. T59	.150**	.056	-.010	.142**	.133**	.233**	.219**	.219**	.215**	.074	.347**	.037**
60. SR60	.138**	.066	-.082*	.197**	.278**	.568**	.194**	.287**	.438**	.086*	.309**	.060

	49	50	51	52	53	54	55	56	57	58	59	60
1. S1												
2. S2												
3. S3												
4. S4												
5. PS5												
6. S6												
7. PS7												
8. T8												
9. T9												
10 S10												
11. PS11												
12. S12												
13. SR13												

Table Continues

	49	50	51	52	53	54	55	56	57	58	59	60
14. PS14												
15. S15												
16. SR16												
17. T17												
18. S18												
19. T19												
20. PS20												
21. T21												
22. T22												
23. S23												
24. T24												
25. PS25												
26. SR26												
27. PS27												

Table Continues

	49	50	51	52	53	54	55	56	57	58	59	60
28. T28												
29. PS29												
30. PS30												
31. S31												
32. S32												
33. SR33												
34. SR34												
35. T35												
36. T36												
37. PS37												
38. T38												
39. SR39												
40. S40												
41. T41												

Table Continues

	49	50	51	52	53	54	55	56	57	58	59	60
42. SR42												
43. PS43												
44. S44												
45. SR45												
46. T46												
47. S47												
48. SR48												
49. T49	1.00											
50. SR50	.004	1.00										
51. SR51	.058	.310**	1.00									
52. S52	.282**	.261**	.321**	1.00								
53. T53	.498**	.136**	.086*	.196**	1.00							

Table Continues

	49	50	51	52	53	54	55	56	57	58	59	60
54. SR54	.161**	.172**	.300**	.301**	.126**	1.00						
55. PS55	.275**	.037	.098*	.164**	.222**	.092*	1.00					
56. SR56	.161**	.273**	.335**	.399**	.112**	.392**	.038	1.00				
57. PS57	.269**	.187**	.215**	.384**	.277**	.279**	.146**	.303**	1.00			
58. S58	.315**	.286**	.328**	.492**	.356**	.326**	.118**	.392**	.543**	1.00		
59. T59	.190**	.215**	.215**	.393**	.239**	.209**	.109**	.209**	.366**	.477**	1.00	
60. SR60	.131**	.304**	.396**	.393**	.133**	.306**	.051	.523**	.370**	.481**	.359**	1.00

Table 7

Descriptive Statistics for MCSOS Total Scale and Conceptual Subscales

	Mean	Standard Deviation	Minimum	Maximum
Total Scale	200.00	28.10	108	280
Conceptual subscales				
Structure	53.93	9.82	18	81
Time	51.49	7.93	26	72
Physical Space	43.11	8.05	22	60
Self-Reflection	45.09	7.37	22	70

Table 8
Pearson Correlation Coefficients for the MCSOS Total Scale, and Conceptual Subscales

	1	2	3	4	5
1. Total Scale	1.00				
2. Structure	.885**	1.00			
3. Time	.822**	.624**	1.00		
4. Physical Space	.781**	.527**	.624**	1.00	
5. Self-Reflection	.782**	.696**	.461**	.430**	1.00

* Correlation is significant at the 0.05 level (two-tailed).

** Correlation is significant at the 0.01 level (two-tailed).

Table 9

Factor Structure Loadings after Varimax Rotation

Item	1	2	3	4	5	6	Mean	SD
S1	.331	.061	.241	.020	.090	.053	3.49	.89
S2	.166	.097	**.715**	.066	-.020	.097	3.58	1.31
S3	.231	.024	.139	-.100	-.042	**.629**	3.34	.92
S4	**.431**	.059	.334	.002	.071	.111	3.00	1.05
PS5	.194	**.565**	.265	.053	.066	.062	3.78	1.04
S6	.208	-.004	.093	-.185	.010	**.708**	3.03	1.02
PS7	.143	.218	.114	.360	.145	-.210	3.50	.88
T8	.247	.211	.288	**.491**	.258	-.140	2.76	1.02
T9	.086	.112	.001	.152	**.487**	-.069	3.35	1.02
S10	**.417**	.050	.264	.192	.252	.011	2.99	.95
PS11	.095	**.633**	-.000	.230	.052	-.001	3.88	.99
S12	.371	.138	.220	.137	.204	.036	3.76	.94
SR13	**.630**	.068	.006	-.034	-.000	.041	2.74	1.03
PS14	.226	**.735**	.172	.032	.117	.009	3.58	.92
S15	.297	.159	**.606**	.109	-.044	.129	3.28	1.21
SR16	**.622**	.130	.021	.041	-.061	.072	3.26	1.04
T17	**.442**	.182	.410	.194	.148	.013	3.49	.84
S18	.428	.160	**.481**	.124	.044	.017	3.11	1.02
T19	.201	.167	.143	.267	.236	-.003	3.78	.73
PS20	.023	**.564**	-.002	.340	.068	-.000	3.32	.90
T21	.058	.224	.108	**.568**	.112	-.006	3.54	.74
T22	.033	-.019	.020	**.436**	.043	-.082	2.97	1.15
S23	**.657**	.059	-.034	.010	.064	.010	2.93	.93
T24	**.492**	.051	.185	.019	.050	.090	2.89	1.04
PS25	.362	.108	.194	.060	.027	.055	3.02	1.27
SR026	.066	.061	.054	.241	-.095	-.044	3.58	1.01
PS27	.240	**.684**	.214	.065	.074	-.003	3.41	1.03

T28	.020	.195	.053	.623	.105	.030	3.65	.93
PS29	.171	**.619**	.359	.294	.120	.063	3.57	1.07
PS30	.202	**.684**	.195	.134	.116	-.026	3.66	1.12
S31	**.692**	.159	.147	.088	.059	.083	2.80	.89
S32	**.539**	.108	.384	.115	.071	.093	2.76	.99
SR33	**.730**	.096	.046	-.002	-.104	.061	2.62	1.02
SR34	**.693**	.075	.002	-.059	-.034	-.015	3.08	1.05
T35	.119	.192	**.720**	.035	.010	.021	3.49	1.38
T36	.377	.189	.307	.271	.190	.062	3.43	.84
PS37	.006	**.687**	-.011	.308	.096	-.024	4.06	.83
T38	.026	.184	-.018	.301	**.691**	-.001	3.87	1.08
SR39	-.116	.109	-.079	**.501**	.060	-.045	3.49	1.00
S40	.168	.002	.101	-.009	.150	.021	2.92	.94
T41	.278	.004	.074	-.155	.013	**.787**	3.09	.96
SR42	**.704**	.116	.053	-.032	.029	.196	3.21	.90
PS43	.088	**.477**	.118	.367	.044	.012	3.29	1.11
S44	**.445**	.030	.218	.075	.175	-.023	2.56	1.06
SR45	**.578**	-.064	.114	.059	.060	.085	3.29	.95
T46	-.071	.161	-.016	.215	**.790**	.040	4.16	.92
S47	**.347**	.249	.358	.246	.385	.001	3.87	.85
SR48	-.033	-.050	-.032	.355	.045	-.041	3.89	.97
T49	.095	.079	.150	.699	.135	.001	3.34	.98
SR50	.390	-.020	.182	-.084	.215	.132	3.18	.80
SR051	**.502**	.058	.129	-.019	.080	.115	3.30	.88
S52	**.448**	.162	.406	.189	.137	.037	3.56	1.02
T53	.111	.145	.210	**.459**	.170	.007	3.22	1.06
SR054	**.403**	.084	.132	.109	.090	.001	2.39	.88
PS55	-.001	.228	.074	.379	.108	-.065	4.41	.80
SR056	**.626**	.048	.082	.083	.055	-.028	3.07	.98
PS057	.342	.373	**.293**	.201	.077	-.038	3.12	1.30

S58	**.515**	.130	.451	.228	.136	-.004	2.93	1.08
T59	.200	.166	.707	.079	-.011	.011	3.36	1.36
SR060	**.721**	.150	.121	.073	-.051	.103	2.99	1.07

Note. S = Structure, T = Time, PS = Physical Space, SR = Self-Reflection.

Table 10

Summary of Factor Loading Item Description

Item Number	Item Description
Factor 1 - Self - Regulation	
S4.	I develop a plan of action to accomplish activities at the library or lab.
S10.	When faced with a deadline, I break down the assignment into parts.
SR13.	I reflect on my plan of action after I complete a project
SR16.	I evaluate the success of my actions when an activity is completed.
T17.	I follow the plans I make to get assignments completed.
S23.	When thinking about performing a new task, I try to identify possible problems before I begin.
T24.	If I have several tasks to complete and very little time in which to do them, I usually give myself a time limit for each task before beginning my work.
S31.	After developing a plan to complete an assignment, I examine my plan and anticipate possible problems.
S32.	I make a step - by - step plan to accomplish an assignment.
SR33.	I evaluate how successfully my time was spent when I finish a project.
SR34.	When I finish a project, I think about how I could do it better next time.
SR42.	When I have difficulty completing tasks, I think about how I can perform them more effectively.
S44.	I have a specific time each week that I use to prepare for each class.
SR45.	When I plan a task, I think about how I accomplished it the last time I did something similar.
SR51.	I decide ho much effort to devote to an assignment based on pervious experiences with similar tasks..
S52.	I plan and schedule study time for tests.
SR54.	I am aware of how much time it is taking to complete a task.

SR56. When I am doing work on an assignment, I monitor whether or not I am reaching my goal.

S58. I make long term plans to accomplish assignments.

SR60. I evaluate if I met my goals when an activity is completed.

Factor 2 - Physical Space

PS5. I have specific places for most of the objects in my home so that I can find them immediately.

PS11. I have trouble remembering where I put things that I need everyday (e.g. pencils, school supplies, books, notebooks, etc.).

PS14. After I use something, I put it back where it belongs.

PS20. I lose things.

PS27. After I use a tool (e.g. pencil, stapler) I return it to its proper place right away.

PS29. I am a well organized person.

PS30. I put my books and course materials in the same place when I return home from class.

PS37. I have trouble locating my book and course materials when I need them.

PS43. My study area is cluttered.

Factor 3 - Sequence Time (Calender / lists)

S2. When I have several things to do in a day, I make a list or put notes around.

S15. When I am given several assignments to complete in a day, I like to make a list of the order in which I will perform them.

S18. When I have some free time, I make plans to accomplish assignments.

T35. I use a daily calender to keep track of assignments.

T59. I use a calender or planner to schedule time to complete tasks.

Factor 4 – Planning Time

T8. I leave things to the last minute.

T21. I have difficulty following through on the plans I make.

T22. When I fail to complete a project on time, it is because I do not give myself enough time.

T28. I start projects, but I have a hard time finishing them.

SR39. When I fail to complete a project on time, it is because I used a faulty plan.

T49. I do not schedule enough time to complete assignments or activities.

T53. I do not get projects started ahead of time.

Factor 5 - Proximity Relationships

T9. I am one of the first people to be at a meeting place with friends.

T38. I have difficulty getting to classes on time.

T46. I show up on time for class.

Factor 6 - Advice

S3. I talk with others to decide how to complete an assignment.

S6. I ask advice from other classmates about time needed to complete assignments

T41. I ask advice from others about how they approach an assignment.

Did Not Load

S1. * I revise my plans for completing an assignment when I anticipate a problem.

PS7. I don't realize that I have forgotten something until I'm already in class.

S12. If I have assignments/papers to complete and very little time in which to do them, I mentally prioritize (or order) them before starting on the first task.

T19. I am able to complete an assignment in a reasonable amount of time.

PS25.	I have an area specifically for study.
SR26.*	When an assignment or test is difficult, I try to get finished quickly.
T36.	Once I make my plan, I follow it.
S40.*	I get academic tasks accomplished the time I have between classes.
S47.	I am able to prioritize my assignments.
SR48.*	When I fail to complete a project on time, it is because of my poor ability
SR49.	I do not schedule enough time to complete assignments or activities.
SR50.*	If an assignment is taking longer to complete than I expected I change my approach.
PS55.	I complete my assignments but can't find them when they are due.
PS57.	I have a system for filing my assignments so I can find them quickly.

Note: S = Structure, T = Time, PS = Physical Space, SR = Self-Reflection as reported on the conceptual scales.

* Items that did not load at .40 or greater on the pilot study

Table 11

Descriptive Statistics for Empirical Factors

	Mean	Standard Deviation	Minimum	Maximum
Empirical Subscales				
Factor 1 - ESR	60.87	12.42	25	98
Factor 2 - EPS	32.55	6.59	15	45
Factor 3 - EST	16.82	4.97	5	25
Factor 4 - EPT	22.96	4.54	8	35
Factor 5 - EPR	11.38	5.49	3	15
Factor 6 - EA	9.46	2.48	3	15

Note. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice

Table 12

Pearson Correlation Coefficients for the MCSOS Total, Conceptual, and Empirical Subscales

	1	2	3	4	5	6	7	8	9	10	11
1. Total Scale	1.00										
2. Structure	.885**	1.00									
3. Time	.822**	.624**	1.00								
4. Physical Space	.781**	.527**	.624**	1.00							
5. Self-Reflection	.782**	.696**	.461**	.430**	1.00						
6. Factor 1 (ESR)	.857**	.870**	.527**	.482**	.907**	1.00					
7. Factor 2 (EPS)	.713**	.452**	.580**	.974**	.359**	.401**	1.00				
8. Factor 3 (EST)	.697**	.745**	.621**	.468**	.417**	.539**	.419**	1.00			
9. Factor 4 (EPT)	.566**	.313**	.795**	.499**	.279**	.258**	.468**	.271**	1.00		
10 Factor 5 (EPR)	.410**	.231**	.628**	.333**	.171**	.195**	.333**	.094*	.412**	1.00	
11. Factor 6 (EA)	.283**	437**	.118**	.066	.287**	.332**	.048	.224**	-.133**	-.047	1.00

* Correlation is significant at the 0.05 level (two-tailed).

** Correlation is significant at the 0.01 level (two-tailed).

Note. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

Table 13

Classification Descriptive Statistics on MCSOS Total Scale, Conceptual Subscales , and Empirical Factors by Academic Status

	Freshman		Sophomore		Junior		Senior	
Variable	M	SD	M	SD	M	SD	M	SD
Total Scale								
MCSOS	198.8	27.61	201.7	27.89	199.72	29.36	199.8	27.69
Conceptual Subscales								
Structure	53.2	9.79	54.4	10.14	54.5	10.0	53.6	9.43
Time	51.1	7.54	52.0	7.57	50.5	8.44	51.3	8.02
Physical Space	42.5	7.73	43.9	8.10	42.6	8.21	43.3	8.10
Self-Reflection	44.7	7.20	44.9	7.15	45.6	7.98	44.9	7.17
Empirical Subscales								
Factor 1 (ESR)	60.5	12.83	60.8	12.28	61.8	13.0	60.5	11.79
Factor 2 (EPS)	32.4	6.38	33.0	6.58	32.0	6.91	32.0	6.50
Factor 3 (EST)	16.5	4.93	17.6	5.07	16.5	5.00	16.7	4.88

Factor 4 (EPT)	23.6	4.27	23.1	4.06	22.7	4.88	22.9	4.73
Factor 5 (EPR)	11.6	2.33	11.2	2.48	11.2	2.65	11.4	2.48
Factor 6 (EA)	9.22	2.54	9..2	2.44	9.73	2.48	9.59	2.45

Note. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

Table 14

Disability Descriptive Statistics on MCSOS Total Scale, Conceptual Subscales , and Empirical Factors by Disability Academic Status

	ND		LD		LD+AD/HD		AD/HD	
Variable	M	SD	M	SD	M	SD	M	SD
Total Scale								
MCSOS	201.3	27.96	196.0	26.88	186.2	25.64	179.7	27.99
Conceptual Subscales								
Structure	54.2	9.73	51.3	11.21	52.7	8.57	50.6	9.45
Time	51.6	7.82	54.4	7.95	43.8	6.64	48.1	7.35
Physical Space	43.5	7.97	42.4	7.73	37.8	8.37	36.6	6.69
Self-Reflection	45.5	7.23	41.7	7.14	45.2	7.95	39.2	8.33
Empirical Factors								
Factor 1 (ESR)	61.3	12.2	56.5	13.35	62.6	12.85	53.5	12.28
Factor 2 (EPS)	32.9	6.46	31.5	6.58	27.8	7.63	27.3	5.80
Factor 3 (EST)	16.9	4.95	16.7	5.52	14.6	3.71	16.2	5.26

Factor 4 (EPT)	22.9	4.45	25.9	4.53	18.8	3.00	21.3	4.38
Factor 5 (EPR)	11.4	2.40	12.3	2.48	9.8	3.32	10.4	3.74
Factor 6 (EA)	9.52	2.39	8.64	3.03	10.3	2.54	8.71	3.48

Note. LD = Learning Disabilities, LD+AD/HD = Learning Disability and Attention Deficit Hyperactivity Disorder, AD/HD = Attention Deficit Hyperactivity Disorder, ND = Student without Disabilities. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

Table 15

Summary of Comparisons Among Disability and Academic Status

Variable	df	F	*p*
Total Scale	3, 688	5.412	.001
Conceptual Subscales			
Structure	3, 688	2.009	.111
Time	3, 688	9.773	.000
Physical Space	3, 688	7.741	.000
Self-Reflection	3, 688	7.232	.000
Empirical Factors			
Factor 1 (ESR)	3, 688	4.400	.004
Factor 2 (EPS)	3, 688	8.420	.000
Factor 3 (EST)	3, 688	1.577	.194
Factor 4 (EPT)	3, 688	13.131	.000
Factor 5 (EPR)	3, 688	5.430	.001
Factor 6 (EA)	3, 688	3.051	.028
Academic Status			
Total Scale	3, 688	0.307	.820

Note. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

Table 16

Summary of Post-Hoc Comparisons Between Group Status and Conceptual Subscales and Empirical Factors

Variable	Mean Difference	*p*	ES
Total			
ND - LD	5.28	.617	---
ND - LD+AD/HD	12.10	.079	0.55
ND - AD/HD	15.66*	.008	0 .78
LD - LD+AD/HD	9.82	.557	---
LD - AD/HD	16.38	.166	0.58
LD+AD/HD - AD/HD	6.55	.892	---
Time			
ND - LD	-2.79	.099	-0.36
ND - LD+AD/HD	7.87*	.000	1.01
ND - AD/HD	3.50	.259	0.45
LD - LD+AD/HD	10.66*	.000	1.40
LD - AD/HD	6.29*	.024	0.77
LD+AD/HD - AD/HD	-4.37	.323	-0.62
Physical Space			
ND - LD	1.09	.817	---
ND - LD+AD/HD	5.72*	.008	0.72
ND - AD/HD	7.17*	.001	0.90
LD - LD+AD/HD	4.63	.133	0.58

LD - AD/HD	6.08*	.037	0.81
LD+AD/HD - AD/HD	1.45	.946	---
Self-Reflection			
ND - LD	3.71*	.006	0.51
ND - LD+AD/HD	0.23	.999	---
ND - AD/HD	6.19*	.003	0.85
LD - LD+AD/HD	-3.48	.287	0.47
LD - AD/HD	2.48	.631	---
LD+AD/HD - AD/HD	5.96	.063	0.73
Factor 1 (ESR)			
ND - LD	4.98*	.048	0.40
ND - LD+AD/HD	-1.26	.970	----
ND - AD/HD	7.81*	.049	0.63
LD - LD+AD/HD	-6.24	.239	-0.47
LD - AD/HD	2.83	.852	---
LD+AD/HD - AD/HD	9.07	.115	0.72
Factor 2 (EPH)			
ND - LD	1.41	.507	---
ND - LD+AD/HD	5.18*	.003	0.80
ND - AD/HD	5.63*	.002	0.87
LD - LD+AD/HD	3.77	.136	0.54
LD - AD/HD	4.23	.102	0.66
LD+AD/HD - AD/HD	0.46	.997	---

Factor 4 (EPT)			
ND - LD	-2.95*	.000	-0.66
ND - LD+AD/HD	4.13*	.000	0.93
ND - AD/HD	1.64	.433	---
LD - LD+AD/HD	7.09*	.000	1.75
LD - AD/HD	4.59*	.002	1.02
LD+AD/HD - AD/HD	-2.49	.319	-0.68
Factor 5 (EPR)			
ND - LD	-0.85	.121	-.035
ND - LD+AD/HD	1.60*	.023	0.66
ND - AD/HD	0.99	.364	---
LD - LD+AD/HD	2.45*	.001	0.89
LD - AD/HD	1.84*	.045	0.65
LD+AD/HD - AD/HD	-0.61	.876	---
Factor 6 (EA)			
ND - LD	0.88	.100	0.36
ND - LD+AD/HD	-0.78	.501	---
ND - AD/HD	0.81	.538	---
LD - LD+AD/HD	-1.66*	.050	0.57
LD - AD/HD	-.019	1.00	---
LD+AD/HD - AD/HD	1.59	.203	0.30

Note. LD = Learning Disabilities, LD+AD/HD = Learning Disability and Attention Deficit Hyperactivity Disorder, AD/HD = Attention Deficit Hyperactivity Disorder, ND

= Student without Disabilities, ES = Effect Size, ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

* Statistically significant at the 0.05 level

Table 17

Reliability

Scale		Original	Deleted Item
Total Scale		.9383	.9391
Subscales			
	Structure	.8709	.8757
	Plan	.8072	.8197
	Physical Arrangement	.8721	.8737
	Self-Reflection	.8148	.8385
	Factor 1 (ESR)	. 9202	.9192
	Factor 2 (EPS)	.8894	.8857
	Factor 3 (EST)	.8474	.8467
	Factor 4 (EPT)	.7782	.7735
	Factor 5 (EPR)	.7682	.8485
	Factor 6 (EA)	.8125	.7930

Note. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

Table 18

Test-Retest Reliability

Scale		R^2
Total Scale		.943**
Subscales		
	Structure	.909 **
	Plan	.907**
	Physical Arrangement	.891**
	Self-Reflection	.864**
	Factor 1 (ESR)	.914**
	Factor 2 (EPS)	.880**
	Factor 3 (EST)	.843**
	Factor 4 (EPT)	.851**
	Factor 5 (EPR)	.809**
	Factor 6 (EA)	.666**

Note. ESR = Empirical Self-Reflection, EPS = Empirical physical space, EST = Empirical Sequence Time, EPT = Empirical planning time, EPR = Empirical proximity relationships, EA = Empirical Advice.

** Correlation is significant at the 0.01 level

Appendix K
Pilot Study

The Development and Technical Characteristics of the

Adult Organization Scale - College

Elizabeth “Elgen” Hillman

University of Maryland

The Development and Technical Characteristics of the Adult Organization Scale - College

It is often assumed that many children with learning disabilities (LD) experience difficulty organizing time, materials, assignments, and thoughts. For example, articles have been published in research to practice journals to help teachers organize students with LD (Haman & Isaacson, 1985; Hildreth, Macke, & Cater, 1995; Mangannelo, 1994; Shields & Heron, 1989; Slade, 1986; Stormont-Spurgin, 1997). Instructional methods textbooks on teaching students with academic and behavior problems include organization and time management strategies (Birsh, 1999; Deshler, Ellis, & Lenz, 1996; Mercer & Mercer, 1989; Schloss, Smith, & Schloss, 1995; Polloway & Patton, 1997). In addition, time management and organizational strategies are included in much of the published materials for teachers and parents (Davis & Sirotowitz, 1996; Dowdy, Patton, Smith, & Polloway, 1998; Hoover & Patton, 1995; Meltzer, Roditi, Haynes, Biddle, Paster, & Taber, 1996; Zionts, 1997). Although many authors make statements regarding problems that students with LD encounter with organization, surprisingly few support these statements with research. The implication of this emphasis on organization is that improvement of these skills will lead to improvement in academic achievement.

Despite the number of authors who described organizational problems and prescribed solutions for students with LD, there are few references in this work documenting the problems or solutions. There are some indications that difficulties with organizational skills are linked to incomplete daily homework assignments (Gajria & Salend, 1995; Trammel, Schloss, & Alper, 1994). Flores, Schloss, and Alper (1995) found that using a daily calendar to plan and record events increased the number of

responsibilities, homework assignments, and activities met by each student. Sah and Borland (1989) discovered that gifted students with LD exhibited organizational problems and improved behavior and achievement with an intervention. However, for the most part, the empirical basis substantiating the organizational problems of students with LD is not apparent.

If it is true that people with LD have organizational problems, one population that may have difficulty with organization is college students. Often, college students may view themselves as "free." This freedom to "do what they want" is difficult to manage. This may be especially true for the student with learning disabilities who may have problems self-regulating behavior (Brinckerhooff, Shaw, & McGuire, 1992). The lack of parental or teacher guidance may make it difficult for students to self-regulate behaviors for which parents have previously supplied structure. For example, parents probably reminded and asked students nightly if they completed their homework, if they had a project coming up that needed attention, if they packed what they needed for school the next day, etc. These are just the beginnings of organizational structures the parents may provide. Students are not provided this structure in a dorm room with a roommate and may not realize to ask themselves the same questions. Parents may also assist students in completing projects by reminding them each step that needed to be completed and in what order. Time management can also be influenced by parents. Parents may remind students of how long it takes to complete assignments as well as convey that no other time is available to finish the assignment even though it is due next week.

In addition to parental support, high school teachers provide organizational structure by reminding students when projects are due. However in the college setting,

this is commonly in the syllabus and is not mentioned again after the first class. High school teachers also remind students of up-coming tests and review material. In college this rarely occurs. College professors assign books to be read by the end of the semester, while a high school teacher might assign two chapters weekly (Brinckerhooff, Shaw, & McGuire, 1992). What teachers expect from an organizational perspective changes dramatically between high school and college.

This account is speculative so it is necessary to determine if, in fact, college students with LD experience organizational problems. A first step in empirical validation of organization issues is the development of a suitable instrument. The purpose of this pilot study was to examine reliability and content validity of the Adult Organization Scale - College (AOS-C). The long-range goal of this research program is to determine if there are differences in organizational skills between normally achieving college students and college students with LD who self-identify to disability support services.

Theoretical Framework

Organization is defined many ways. Nissenbaum (1999) defined organizational problems as perceiving and affecting structure in space and time and discrimination of essential components of structure. However, other authors are more specific. Deshler, Ellis, and Lenz (1996) described the organizational difficulties of students with LD as: (a) failure to perceive the importance of information organization, (b) inability to recognize that information can be reorganized into categories, (c) difficulty managing singular tasks in an organized manner, (d) problems comprehending organization in an arrangement of material, and (e) complications when managing multiple tasks in an organized manner. For the purpose of this study organization is defined as (a) ability to

structure and plan a task, (b) manage activities within a time framework, (c) systematically arrange objects and assignments within physical space for rapid retrieval and (d) self - reflection..

A way of understanding organizational problems is through self-regulation theory. After reviewing the literature it became apparent that organization or lack of organization could be directly linked to self-regulation theory. This link is critical because self-regulation skills are correlates if not causal factors in achievement (Butler, 1994, 1995, 1998; Graham & Harris, 1989; Sawyer, Graham, & Harris, 1992; Schumaker & Deshler, 1992; Wong, Butler, Ficzere, & Kuperis, 1996).

Thus, attention to organizational skills may have implications for the achievements of college students with LD. For example, VanZile-Tamsen and Livingston (1999) found that lower achieving college students reported less self-regulated behaviors and strategy use that high achieving college students. Zimmerman and Martinez-Pons (1986, 1988) demonstrated that high achievers and self-regulated learners engage in time management activities. Zimmerman (1998, 2000), Zimmerman and Martinez-Pons (1988), and Pintrich (2000) reported improvement in self-regulation increases academic achievement. I believe that improvement in organization will lead to improvement in self-regulation of behavior and, as a result, increase critical academic behaviors and achievement.

Self-regulation is a person's ability to "self-generate thoughts, feelings, and actions that are planned and cyclically adapted to the attainment of personal goals." (p. 14). Zimmerman (2000) noted "perhaps our most important quality as humans is our capability to self-regulate" (p. 13). Many variations of self-regulation theory exist.

However, Zimmerman (1989) stated a common thread across the theories is the "belief that students' perceptions of themselves as learners and their use of various processes to regular their behavior are critical factors in the analysis of academic achievement" (p. 1). Self-regulation theory provides an explanation of how students control their own learning and developments cognitively, motivationally, and behaviorally. There are several basic assumptions about student learning in self-regulation learning theory. First, a person is an active and creative part in the learning environment (Pintrich, 2000; Zimmerman, 1989). Second, learners can control and regulate certain features of the environment through the use of metacognitive and motivational strategies (Pintrich, 2000; Zimmerman, 1989). Third, learners set a standard (goal) to which present progress is compared to determine if change is necessary (Pintrich, 2000; Zimmerman, 1989). The final theoretical assumption is that self-regulatory activities are directly linked to achievement and performance outcomes (Pintrich, 2000; Zimmerman, 1989).

At least six different variations of self-regulation theory exist, however, the social cognitive perspective will be discussed in relation to this study. Social cognitive self-regulation theory was chosen because it integrates behavior, cognition and environment with include cognitive, meacognitive, social and motivational skills. Social cognitive self-regulation theory views self-regulation as an interaction between personal, behavioral, and environmental behaviors (Bandura, 1986; Zimmerman, 2000). Self-regulatory processes and beliefs are demonstrated in three categories or cyclical phases: forethought, performance, and self-reflection (Zimmerman, 1998, 2000; Figure 4).

Figure 4 represents the three phases and recursive nature of self-regulation and some of the behaviors exhibited in these phases. These behaviors parallel those required

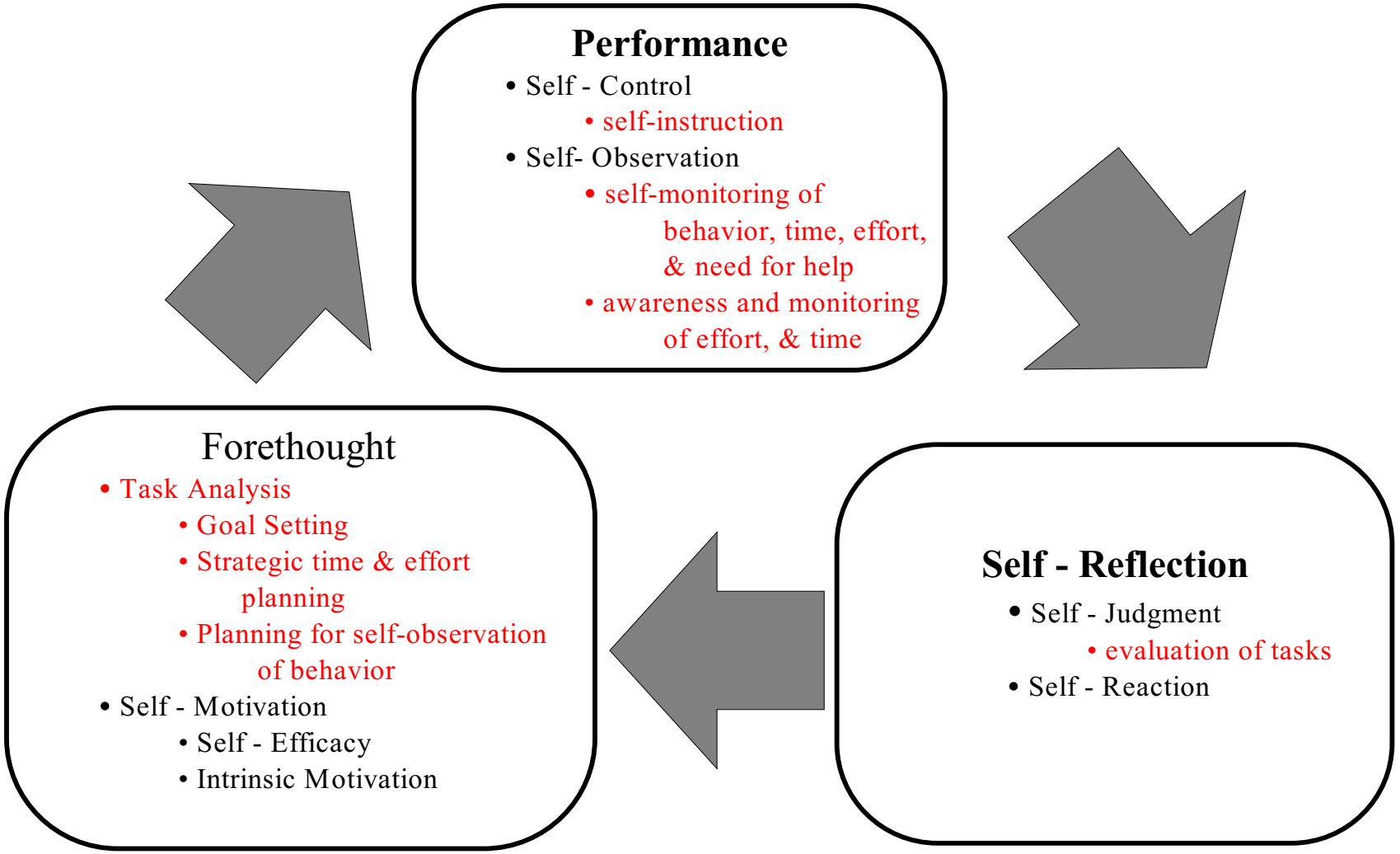
Performance
• Self - Control
• self-instruction
• Self- Observation
• self-monitoring of behavior, time, effort, & need for help
• awareness and monitoring of effort, & time
Self - Reflection
• Self - Judgment
• evaluation of tasks
• Self - Reaction
Forethought
• Task Analysis
• Goal Setting
• Strategic time & effort planning
• Planning for self-observation of behavior
• Self - Motivation
• Self - Efficacy
• Intrinsic Motivation

Figure 4. Cyclical phases of self-regulation modified to include characteristics and behaviors. From: Zimmerman, B. J. (1989). Models of self-regulated learning and academic achievement. In B. J. Zimmerman & D. H. Schunk (Eds.), *Self-regulated learning and academic achievement: Theory, research, and practice*, (p. 1 - 25). New York, NY: Springer-Verlag.

for organization as defined in this study. These behaviors are designated in red to demonstrate the similarities in self-regulation and organization.

The first phase in this theory is forethought which involves task analysis and self-motivational beliefs (Zimmerman, 1998, 2000). Task analysis includes goal setting and strategic planning, while self-motivational beliefs are composed of self-efficacy goal orientation, outcome exceptions, and intrinsic motivation. This phase includes many behaviors that directly apply to organization, such as goal setting, time and effort planning, and planning for self-observation of behaviors. Pintrich (2000) specifically describes time and effort planning as making schedules for studying and assigning time for activities. Part of this planning for time also includes decision making about allocation and monitoring of effort and work intensity (Pintrich 2000). Planning and organization must also be involved in self-monitoring behaviors (e.g., schedules, graphs) (Pintrich, 2000).

The second phase is performance which includes self-control and self-observation. Self- control involves using processes such as attention, self-instruction, and task strategies to concentrate and optimize effort. Self-observation is the ability of a person to track "specific aspects of their own performance, the conditions that surround it, and the effects that it produces" (p. 19). Behaviors included in this phase that apply to organization are self-instruction and self-monitoring or recording. Self-monitoring and awareness of behavior can provide information that can be used in planning other activities and behavioral control (Pintrich, 2000).

The third phase is self-reflection which involves self-judgement and self-reaction (Zimmerman, 1998, 2000). Self-judgement includes self-evaluation of performance, while

self-reaction involves perceptions of satisfaction with performance and conclusions about how to alter strategies for performance if needed. Evaluation of performance of tasks is a behavior in this phase that applies to organization. The ability to make general evaluations if actions were successful in achieving a goal are extremely important because they directly impact the forethought phase in the model.

With regard to self regulation, Zimmerman (2000) discussed the relationship between dysfunction in self-regulation and LD. Problems in concentration, recall, reading, and writing which are thought to have neurological origins lead to self-regulation problems (Borkowski and Thorpe, 1994). Students with LD set lower academic standards, have trouble containing impulses, and are less precise when estimating academic skills (Borkowski & Thorpe, 1994). Swanson (1990) reported that students with LD have difficulties with monitoring, checking, and revising their activities.

Students with LD experience problems in self-regulation due to problems in motivation, self-efficacy, goal setting, and basic cognitive skills . These problems do not disappear with age. There is a growing concern that adults with LD, do not become self-regulated learners (Schneider & Pressley, 1989; Schunk & Zimmerman, 1994a). Bursuck and Jayanthi (1993) and Deshler, Schumaker, Alley, Warner, and Clark (1982) stated that students with learning disabilities continue to exhibit strategic deficiencies into adulthood. Hofer, Yu, and Pintrich (1998) specifically discuss the need to teach managing and organizing of time. This apparent difficulty in self-regulation can lead to difficulties with organization of tasks, time, and concepts. Many aspects of the my definition of organization are mirrored in self-regulation theory. The forethought, planning, and activation stages involve task analysis and goal setting. Pintrich (2000) also places

importance on planning, scheduling of time and tasks, as well as monitoring. Since students with LD experience problems with self-regulation, it is logical that these difficulties would affect their organizational skills.

Literature Review

Search

The search for research articles for this review included several steps. First, the search was limited to published journal articles. Second, a systematic search through three computerized databases was conducted that included Education Resources Information Center (ERIC), Psychological Abstracts, and Exceptional Child Education Resources. The following descriptors were used: organization, study skills, time management, time estimation, organize, planning, self-monitoring, self-regulation, disabilities, learning disabilities, mildly handicapped, learning handicapped, learning problems, academically handicapped, and special education. Next, I discussed this topic with faculty members who provided the names of Lynn Meltzer, Paul Pintrich, Robert Stodden, and Stan Shaw whose work might be pertinent to this study. An additional search was conducted using ERIC based on these authors' names. Twenty articles were found. However, only 8 were primary research articles. (15 counting the time estimation literature)

Following the computerized database searches, a manual search of the latest issues (1998-2000) of the relevant professional journals was conducted. Journals included in the hand search were: *Exceptional Children, Focus on Exceptional Children, Intervention in School and Clinic, Journal of Educational Psychology, Journal of Learning Disabilities, Journal of Special Education, Learning Disabilities Research and Practice, Learning Disabilities Quarterly*, and *Teaching Exceptional Children*. Next an ancestral search

through the references of the articles obtained was conducted, with seven additional articles acquired. Finally, I searched University of Maryland's catalog, Victor, to locate textbooks about leaning disabilities, and organizational problems for additional information. The search revealed twenty-nine articles however, only fifteen articles were empirically based and will be reviewed.

The identified studies measured time estimation and planning skills of students with and without disabilities, and children who were average or poor achievers. The research also includes studies that specifically look at measuring these specific skills. Although this literature does not directly apply to the population of interest in this study, this material was the only research available on this subject. In the following sections, these studies will be reviewed as follows: time estimation, organization, self-monitoring interventions, and measures.

Review of Literature

Time Estimation

Time is a key aspect of organization, therefore time is reflected in the definition. Self-regulation theory states many different behaviors that consider time and the planning of time. Therefore, it would be essential to consider time in respect to students with learning disabilities. There are several reports that students with learning, attention, and emotional problems also exhibit problems in estimating time (Bruno, Johnson, & Simon, 1988; Burd, Dodd, & Fisher, 1984; Capella, Gentile, & Juliano, 1977; Dodd, Griswold, Smith, & Burd, 1985; Forer & Keogh, 1971; Nelson, Smith, Dodd, Gilbert ; 1991; Senior, Towne, & Hussy, 1979). For the most part, these studies are flawed methodologically but will be reviewed briefly to provide a sense of the findings. Forer and Keogh (1971) found

that 23 second and 22 fifth grade boys with LD experienced less mastery of perceptual and cognitive aspects of time than normally achieving students based on the Time Understanding Inventory. Bruno et al. (1988) was interested in the ability of students with LD to estimate time. The researchers matched groups of students with and without LD based on IQ and achievement scores. Bruno et al. discovered that 8 middle school students with LD differed significantly from 8 students without LD when estimating 15 second time intervals. Burd et al. (1984), determined that fourth, fifth, and sixth grade students with LD experience difficulties in time estimation when compared to peers without disabilities.

It is also apparent that populations with emotional handicaps as well as students with ADHD experience difficulty with the estimation of time. Francis (1988) determined that elementary students with emotional disabilities when compared to peers without disabilities experience difficulties in time estimation as reported by the Function Time Estimation Scale (FTES). Nelson et al. (1991) had similar findings with middle school students. The researchers were able to differentiate between LD and peers without disabilities based on time estimation ability. Cappella et al., (1977) compared the ability of elementary, middle, and high school students with and without hyperactivity to estimate time intervals. The researchers found that students with hyperactivity significantly differed from those without hyperactivity. Students with hyperactivity estimated elapsed time intervals as larger. However, Senior et al. (1979) in an effort to replicate the finding of Cappella et al., investigated the time estimation abilities of three groups, 135 normally achieving students, 6 students with hyperactivity, and 6 student with mental retardation (MR). Students with hyperactivity were significantly different from

normally achieving peers, however they underestimated the time interval which is opposite of what Cappella et al. reported.

Dodd et al. (1985) conducted a two-part study to determine if children with LD differed from peers on time estimation tasks. Time estimation was targeted because the authors found little empirical support for the frequently cited relationship between poor temporal skills and LD. Temporal organization is a broad term including telling time and the perception, estimation, orientation, and organization of time. In the first portion of the study, reliability and validity of an instrument were assessed to measure estimation of time. The second study extended the validity analysis of the instrument. In study one, 1079 students in first through sixth grades were administered a 58 item instrument that required students to choose the best estimate of the quantity of time required for various activities, situations, and experiences. The number of items of the FTES was reduced to 38 based on item analysis and correlations with age. Reliability, assessed with Cronbach's coefficient alpha, was .88. Construct validity was examined with component analysis. Three factors were obtained: general time estimation, short-term time estimation, and school holiday intervals. General time estimation accounted for 74% of the variance, while short-term time estimation accounted for 13% and school holiday intervals accounted for 7%. To establish construct validity, the composite time score was regressed on age. This yielded a moderate correlation of .66 between the composite time score and age, thus revealing that as age increases, time estimation increases.

In study two, validity of the FTES was further examined by determining if students with LD obtained lower scores than students without LD. Researchers compared the time duration estimates of 86 students with LD to 222 non-handicapped students.

Graduate students administered the FTES to participants. FTES scores were regressed on age to calculate slopes and intercepts for each group. Correlations and slopes between students with and without LD were compared. FTES composite scores were regressed on age yielding identical slopes but different intercepts when the two groups were compared. This means students with LD score lower at each age. No differences between males and females were found. Children with LD experienced time orientation difficulty. Regardless of group membership or gender, age was strongly and linearly related to the FTES total scale score. The researchers found some evidence that the Functional Time Estimation scale (FTES) was reliable and valid.

In the final study assessing time, Bruno's (1995) study assessed time allocation, not time estimation with at-risk students. The study included both a qualitative and quantitative component. The researcher measured teacher-identified at-risk students in relation to normally achieving middle and high school students on time utilization. Over 500 students were given a self-report survey measuring the students' time allocation preferences. Time preferences between outer, other, inner, and non-directed time-consuming tasks were evaluated. At-risk students reported higher time allocations for non-directed activities such as watching television and "hanging out" than normally achieving students. At-risk students also reported lower time allocation for time-consuming activities such as studying and homework than the comparison group. Bruno (1995) reported that the factors that contributed unique variance to non-directed time allocation were gender, teacher classification of at risk, and percent of outer-directed time allocations. No validity evidence for the self-report measure were reported.

Organization

Zentall et al. (1993) investigated the organizational problems of students with Attention Deficit Hyperactivity Disorder (ADHD) in the elementary general education classroom. Organization was targeted because the authors found little empirical support in the literature for deficits in organization even though there is anecdotal evidence to support the existence of organizational problems. The study explored whether organizational deficits could be documented in children with attention deficit hyperactivity disorder (ADHD) across sources (parents and children) using a measure of both object organization and time. Identifying organization problems in students with ADHD could lead to intervention and hopefully lead to better academic achievement in the regular education classroom.

Thirty-eight students were placed into two groups, ADHD and non-ADHD. The researchers developed two measures of organization and time: Child Organization Scale (COS) and the Child Organization Parent Perception Scale (COPPS). Questions were generated from literature, clinical experience, and professionals in the field. Each measure contained two categories of items. The first category concerned placement of inanimate objects. The second category was organization of time. Questions were answered on a five point Likert scale. COS was completed by children while parents completed the COPPS. Significant differences between students with and without ADHD were found on both the object and time section of the COS. Significant group differences were also found on the time section of the COPPS completed by mothers. Results for the object section were marginal ($p < .115$). Significant group differences were found on the time scale portion of the COPPS completed by fathers of students with ADHD. The researchers documented discriminate construct validity for the COS and COPPS. The researchers found that

children with hyperactivity were aware that they lacked the ability to organize various aspects of their life, established few routines, and could not find items on a regular basis.

Grskovic et al. (1995) conducted a two-part study to determine if students with mild disabilities, including attention and emotional difficulties, experience organizational problems when IQ differences were controlled. The authors noted that a significant body of research found that students with learning problems exhibited problems in estimating time (Burd et al., 1984; Capella et al., 1977; Dodd et al, 1985, Forer & Keogh, 1971; Hayes, Hynd, & Wisenbaker, 1986; Nelson et al., 1991; Senior et al., 1979; White, Barratt, & Adams, 1979), however, very little of the research controlled for IQ. The second portion of the study measured the predictive validity time estimation skills. Study one compared the time estimations of 6 students with LD, 7 children with emotional handicaps (EH), 20 children with ADHD and 6 students with ED and ADHD to12 peers without disabilities controlling for IQ. An adapted version of the functional time estimation questionnaire (FTEQ) and the COS was administered to the students. Teachers were given the Child Organization Scale - Teacher version (COS-T). Significant differences were reported between the comparison group and the LD and ADHD+EH groups. However, when IQ was controlled no significant differences were found. The authors, when assessing the validity of the adapted time estimation questionnaire, found that one item on the COS-T correlated highly with the A-FTEQ: students who had higher A-FTEQ scores were rated by teachers as planning ahead. Curiously, the authors did not provide descriptive statistics for the IQ measure nor did they report the measure of intelligence used. The authors suggested that IQ is causal factor of organizational problems. However, this evidence is correlational, not causal.

Studies have also been conducted with poor achievers. Kops and Belmont (1985) were interested in the lack of metacognitive and executive function skills of poor achieving students based on literature and teacher observation. The hypothesis of the study was that there are some failing students who tend to be inefficient planners and organizers, while children who do adequately in school are more effective planners and organizers. The planning and organizational ability of 20 low average students and 20 normally achieving second grade students were compared. Children were matched on age, IQ, sex and SES. Students were assigned to low or average achievement groups based on a teacher rating and scores on a reading measure. Kops and Belmont (1985) selected planning and organizational tasks that were complicated to permit varied student behavior. The tasks were chosen to determine if experiencing failure may itself destroy motivation and impact the organization of students. Equally manageable tasks were chosen for each group thus eliminating the possibility that differences are related to skill and ability. Low achieving children demonstrated fewer organizational skills on the experimental tasks than average achieving peers. On the maze measure, different results were found. Low achieving children completed the mazes quicker, showed fewer delays, and showed fewer pauses in pencil movement than average achievers. These results indicate that lower achieving student might not deliberate upon the next move made as compared with average achievers. Overall, the findings may be due to difficulty in organizing cognitive skills. However, statistical problems were noted in the study. The authors conducted 15 t-tests without controlling for family wise error. Thus, these findings need to be viewed with caution.

Self-Regulation Interventions

Self-monitoring consists of instructing a student to observe and record their own action (Schloss, Smith, & Schloss, 1995) and pertains to the performance stage of self-regulation. Harchik, Sherman, and Sheldon (1992), Reid (1996), and McDougal (1998) found several advantages of self-monitoring strategies for students with learning disabilities. Reviews of literature concluded that individuals may be taught to self-monitor behavior in situations where naturally occurring contingencies to alter behavior are improbable (Harchick et al, 1992; McDougal, 1998; Reid, 1996). Self-monitoring can increase or decrease a individual's behavior without constant, direct supervision (Harchick et al, 1992; McDougal, 1998; Reid, 1996). The use of self-monitoring procedures with adolescents has increased organization and completion of homework and assignments.

Trammel, Schloss, and Alper (1994) used a multiple baseline design across participants to assess the use of a self-monitoring strategy to increase the number of homework assignments completed by students with learning disabilities. The settings were a regular and special education classroom. The self-monitoring strategy included: self-recording, evaluation and graphing of homework assignments completed. General education teachers collected data on whether the students had met the homework requirement for that day and reported it to the resource teacher. Self-monitoring through goal setting and graphing enhanced the homework completion of secondary students with learning disabilities by 80 percent over baseline.

Clees (1995) used a multiple baseline with reversal design across participants to assess the effects of self-recording of teachers' expectancies on the performance of four adolescent students with learning disabilities. The settings were a regular and special education classroom. The self-recording strategy included the teacher introducing each

student to the schedule. The strategy was taught by modeling, orally saying steps, recording answers, and mentally reviewing the steps. Data were collected by the general education teachers on whether the students had met the expectancies for that day. The expectancies included: begins class on-time, bring necessary materials to class, turns in completed homework, completes all class work and writes down homework assignments in assignment notebook. The data were used to obtain the percentage of expectancies met. The results of this study shows that self-recording expectancies in a daily schedule planner increased teacher expected behaviors by 66 percent over baseline.

Flores et al. (1995) investigated a use of a daily calendar. They employed a multiple baseline across participants to increase responsibilities fulfilled by eight secondary students with special needs. Three of the participants were diagnosed as having mild to moderate mental retardation, and the remaining five students were diagnosed with severe learning disabilities. The settings were a special education classroom and a vocational job site. The students were taught to carry their daily calender, record activities needing to be completed, and use the calender to accomplish responsibilities. The strategy was taught through modeling and discussion. Data were collected by the researcher communicating with the general education teachers, employers, and job coach about how many individual obligations were met. The data were used to obtain the percentage of responsibilities met. The results of this study showed that using a daily calender to record events increased the number of responsibilities met by each student by 88 percent over baseline.

In summary, several points are evident from the review of literature. First, students with learning, attention, and emotional problems exhibit problems in estimating and

allocation of time. Second, students with LD or ADHD, and low achieving students have difficulty with organization when compared with normally achieving students. Third, very little research with college student on this topic has been conducted. Finally, the use of self-monitoring techniques caused increased organization and completion of homework assignments in adolescent students.

Measures

I located several measures used to assess time estimation and organization. These instruments and tasks are: time estimation, desktop neatness, FTES, COS, and AOS. This section will analysis strengths and weakness of these measures.

The FTES was developed in 1985 to be used with elementary school students (Dodd et al., 1985). Thirty-eight times comprise the measure that required students to choose the best estimate of the quantity of time required for various activities, situations, and experiences. One strength of this measure is the reliability of .88 based on coefficient alpha. Also, Dodd et al. (1985) developed and normed the test on a test sample of 1079 participants. This meets Crocker and Algina (1986) suggestion of "100 examinees or 10 times the number of variables" (p. 296.) Evidence of construct validity was demonstrated in several ways. A factor analysis yielded three factors. The measure also distinguished between groups based on age and learning Group Status. Frances (1988), and Nelson et al. (1990) also provided evidence of discriminant validity by distinguishing between groups based on presence and absence of emotional disabilities (ED).

However, weaknesses also were apparent. Dodd et al. (1985) were vague in describing their sample. Dodd et al. reported age, gender, and grade level for both the normally achieving students and students with LD. However, race and SES was assumed

for both groups, stating "the population was presumed to be primarily white and middle income" (p.190). Achievement information was not reported for the normally achieving students. Additional problems exist with the description of the LD population. Achievement scores, IQ scores, and number of years in special education were not reported. The failure of authors to include achievement information along with other basic and essential criteria discussed above leads to the inability to replicate and generalize the research. A possible confound occurred during the second portion of the Dodd et al. (1985) study. All normally achieving students were tested in the spring and the students with LD were assessed during the summer. Thus maturation may be as a confounding factor.

When reviewing the technical aspects of the Dodd et al. (1985) FTES measure, several problems were found. Reliability was not reported by individual age but by grouping first through six grade students together. This artificially inflates the reliability coefficient by taking advantage of age variation. Description of data analysis performed in the study was poorly written and confusing. The author simply stated that a factor analysis was done, reported the three factors, and the proportion of the variance for which they accounted. Dodd et al. did not address the issues of possible missing data in the survey. The author also failed to report eigen values as well as factor loadings. In addition the author neglected to convey if factors were rotated. Further a scree plot was not analyzed and limitations were not reported. Although there are some positive aspects of the FTES, the methodological limitations and narrow focus of the instrument precludes its use in the present study.

The study by Zentall et al. (1993) was specifically conducted to develop and validate a researcher-developed measure. In this case, the researchers developed a parent and child organizational scale. Questions were generated from literature, clinical experience, and professionals in the field. Both measures were comprised of two categories of items. The first group was an organization of animate objects being related to differing viewpoints of organizational placement of inanimate objects. The second grouping was an organization of time being related to temporal organization. A strength of the measure is that the survey closely matches the operational definition construct of organization used in this study. The measurement instrument developed by Zentall et al. and used by Grskovic et al. (1995) was a Likert scale. Salvia and Ysseldyke (1998) stated that self-report and rating scales have inherent subjectivity. However, the item format was varied throughout the study to ensure against response set. The researcher correctly used non-parametric statistics and controlled for family wise error. Zentall et al. demonstrated construct validity for the COS and COPPS by discriminating between ADHD and non-ADHD students.

Several weaknesses, however, were noted. Zentall et al. (1993) developed and performed the analysis for technical characteristics on a sample of only 38 participants thus limiting the generalizability. The subject description provided by the researchers only used three of seven minimum standards developed by the Council for Learning Disabilities (CLD) in 1992. Gender and age were the only subject data provided. Achievement scores for only half the subject participants were included. The students with ADHD included in this study were classified using the Werry-Weiss-Peters (WWP) test for hyperactivity. Students having the label of ADHD were reported to have scored two

standard deviations above the mean on this measure. However, no scores were provided. In general, it was difficult to obtain a clear picture of the sample that participated in this study.

Regarding the researcher-developed COS, no reliability analysis was conducted. The data analysis performed in the study was poorly written, reported, and, at times, confusing. Upon review of the "*p*" values provided, two were stated by the author to be statistically significant; yet the "*p*" value was greater that .05. Another possible negative issue with the study is that the measure was administered by a parent, possibly affecting the participant's responses.

The COS was designed to assess children not young adults as proposed in this current study. Upon beginning this study the author contacted S.S. Zentall to ask for relevant literature in this area, if a measure had been developed for college students and additional reliability and validity information. Zentall supplied several additional references. Zentall (personal communication, April 11, 2001) reported that very little reliability and validity information was available for the COS instrument. She also conveyed the lack of an instrument designed for college students. However, she and her colleagues had developed an Adult Organizational Scale (AOS) which she provided to me. But no reliability or validity information was provided with the instrument.

After I reviewed the above measures it was apparent that an appropriate measure needed to be developed. None of the instruments have been developed or used with college students. Poor participant description and small sample sizes also limit the usefulness of developed measures as do poor reliability and validity. As a result of the

above factors, it was determined that an appropriate instrument to assess organization for college students needed to be developed.

Method

Participants

Participants were 100 freshman and sophomore college students from two and four year colleges in the Baltimore, MD and Washington, D.C. area. Demographic information on the 100 participants who completed the survey are presented in Table 19. As can be seen in Table 19, the participants were primarily of female (91%) and sophomores (95%). Slightly more than one-fourth (26%) of the sample was disabled while 74% were non-disabled. There was considerable variably in the type of disability. Of the 26% of students with disabilities, 7% were ADD, 8% were LD, 4% had physical disabilities, 6% had other disabilities, and 1% had multiple disabilities. The ethic distribution was 86% Caucasian, 8% African American, 9% Asian, 5% Hispanic, and 10% other. Descriptive statistics for continuum variables that describe participants are shown in Table 20. The participants self-reported SAT averaged 1184 (SD=115.59) and college GPA was 3.19 (SD=.49). The participants averaged 20.52 (SD= 4.26) years of age.

Instrument Development

Crocker and Algina (1986) discussed six steps necessary for instrument development: (a) identify the purpose, (b) identify behavior representing the construct, (c) construct pool of items, (d) have items reviewed, (e) try out items and (f) develop standardized directions and administration procedure. I identified the purpose of the instrument by reflective thought about the basic purpose of measuring organizational

skills of college students with learning disabilities. An extensive search of the literature failed to produced a suitable instrument.

I developed a definition of the construct organization by applying tenets of self-regulation theory and by identifying behaviors believed to demonstrate organization. Instrument development was based on the following definition of organization: (a) ability to structure and plan a task, (b) manage activities within a time framework, (c) systematically arrange objects and assignments within physical space for rapid retrieval and (d) self-reflection.

The first behavior deals with the structure and planning of tasks and activities in the forethought stage of self-regulation theory. The second behavior is the organization of tasks and allocation of time as seen in theory in the performance stage. The third behavior is the organization of objects with these items being related to differing viewpoints of organizational placement of inanimate objects. The fourth behavior deals with ability to evaluate performance of behaviors and determine if the behavior was successful in reaching the goal. This definition is a modification of Zentall et al. (1993) who defined organization as: (a) design and manage activities inside a time framework, (b) systematically group objects within space for fast retrieval and (c) structure an approach to a task. The two definitions differ on several aspects. I desired a clearer demarcation between (a) and (c) of the above definition, due to the fact that design and structure have similar definitions. Thus, in my definition, construct (a) deals with planning a task where as construct (b) quantifies managing the activity. Construct (d) was added based on self-regulation theory (Zimmerman, 2000). Having defined a construct, the next step was item construction.

To produce a pool of items I began by adapting the COS for the purpose of this study. The COS was developed as a 5 point Likert scale. Isaac and Michael (1997) stated that five positions are most commonly used within a Likert scale. A 5 point Likert scale was used in this study ranging from 1, never, to 5, always, . I developed and revised items based on the four behaviors for the study. Items were selected from three sources. First, the applicable items on the COS were rewritten to reflect the college level (N = 24). Second, relevant items from the Adult Organizational Scale (AOS) were included (N = 12). Finally, I developed items in accordance with the literature and constructs (N =19). See Pilot Study Appendix L for a specific list of items and their origin. I made an effort to have equal number of items each representing construct. Finally, Dr. Deborah Speece and I reviewed the items for format, appropriateness or relevance, grammar, bias, and readability. Then each item was randomly assigned a number and arranged in the survey. The new instrument is the Adult Organization Scale - College Version 1(AOS - C1) (Pilot Study Appendix M).

The next step was review by seven experts in the fields of self-regulation and learning disabilities. The experts were provided with the definition of organization and asked to evaluate the instrument according to question clarity, relevance to the domain, and readability. Based upon feedback gained from these professionals and students, the AOS-C1 (Appendix B) was revised into the final verison of the survey instrument the Adult Organization Scale - College Version 2 (AOS-C2) (Appendix O).

Procedure

First, the COS was assessed for content validity through a content review. Experts in the field of post-secondary learning disabilities, self-regulation, time estimation and organization (Appendix N) were contacted and agreed to participate. Experts' comments and suggestions were considered and AOS-C1 (Appendix M) was revised into AOS-C2 (Appendix O).

Professors from the College of Education who taught classes that contained mainly freshman and sophomores were contacted through e-mail, mail, and phone to determine their willingness to allow their class to participate in the study. Six of the seven professors contacted agreed to participate. The researcher contacted the professors to schedule a time to administer the AOS-C2. Standardized directions were read to the participants (Appendix P) and questions were answered. Students then completed the AOS-C2. The entire examination period including instruction was five to eight minutes.

Results

Content Validity

Content validity was evaluated based on an analysis of expert reviewers' comments. Items were deleted if three or more experts reported that the item did not fit (Appendix Q). Based on this criterion five items were deleted. Another item was deleted due to a change in focus of the instrument from personnel and academic organization to a strictly academic purpose. Items that had a personnel and academic purpose were reworded to focus only on the academic concentration.

Fourteen items were added. Experts suggested adding items based on the following topics: anticipating problems, following through with plans, adjusting plans,

reflection, poor planning, goal setting, asking advice, coming up with plans of action, enacting plans once they are made, reflecting on outcomes, and adjusting plans (Appendix R). Other item wordings were to improve readability.

Reliability

Reliability of total and subscale COS scores were established through coefficient alpha. The reliability of the total scale was .9406. There was a negligible increase if one item was deleted (r=.9416). Subscale reliability ranged from .90 to .78 when one item was deleted (see Table 21).

Construct Validity

Factor Analysis. A preliminary exploratory factor analysis was conducted to determine the number of common dimensions underlying the instrument and their similarity with the proposed scales, an indicator of construct validity. Prior to rotation, the factor analysis produced fifteen factors with an eigenvalues greater than 1.0. The fifteen factors accounted for 76% of the variance. The eigenvalues ranged from 16.09 to 1.06. A strict visual analysis of the scree plot

revealed three factors (Figure 5). However, based on a liberal visual analysis of the scree plot of eigenvalues, a four factor solution was rotated by using a varimax solution.

The four-factor solution of the forced varimax rotation accounted for 45.26% of the total variance. There eigenvalues were 10.17, 7.21, 7.06, and 2.70. Items were assigned to a factor if loading was at .40 or greater on any of the four factors, however eleven items did not load at .40 or higher. As can be seen in Table 22, 21 of the 60 rotated items loaded at .40 or greater on the first factor. This factor accounted for 16.96% of the total variance in organization. Items for this factor reflect the student's ability to

structure/plan a task and manage it within a time framework. Factor one was comprised of ten structure items, eight time items, three physical space items and no self-regulation items.

Thirteen of the 60 items loaded on the second factor (Table 22). This factor accounted for 12.02% of the scale variance. Items that loaded on this factor were related to the students' ability to systematically arrange objects and assignments within physical space for rapid retrieval. Factor two was comprised of no structure items, five time items, eight physical space items and no self-regulation items.

Thirteen of the 60 items load on the third factor and accounted for 11.77% of the variance. The third factor related to self-reflection. Factor three was composed of two

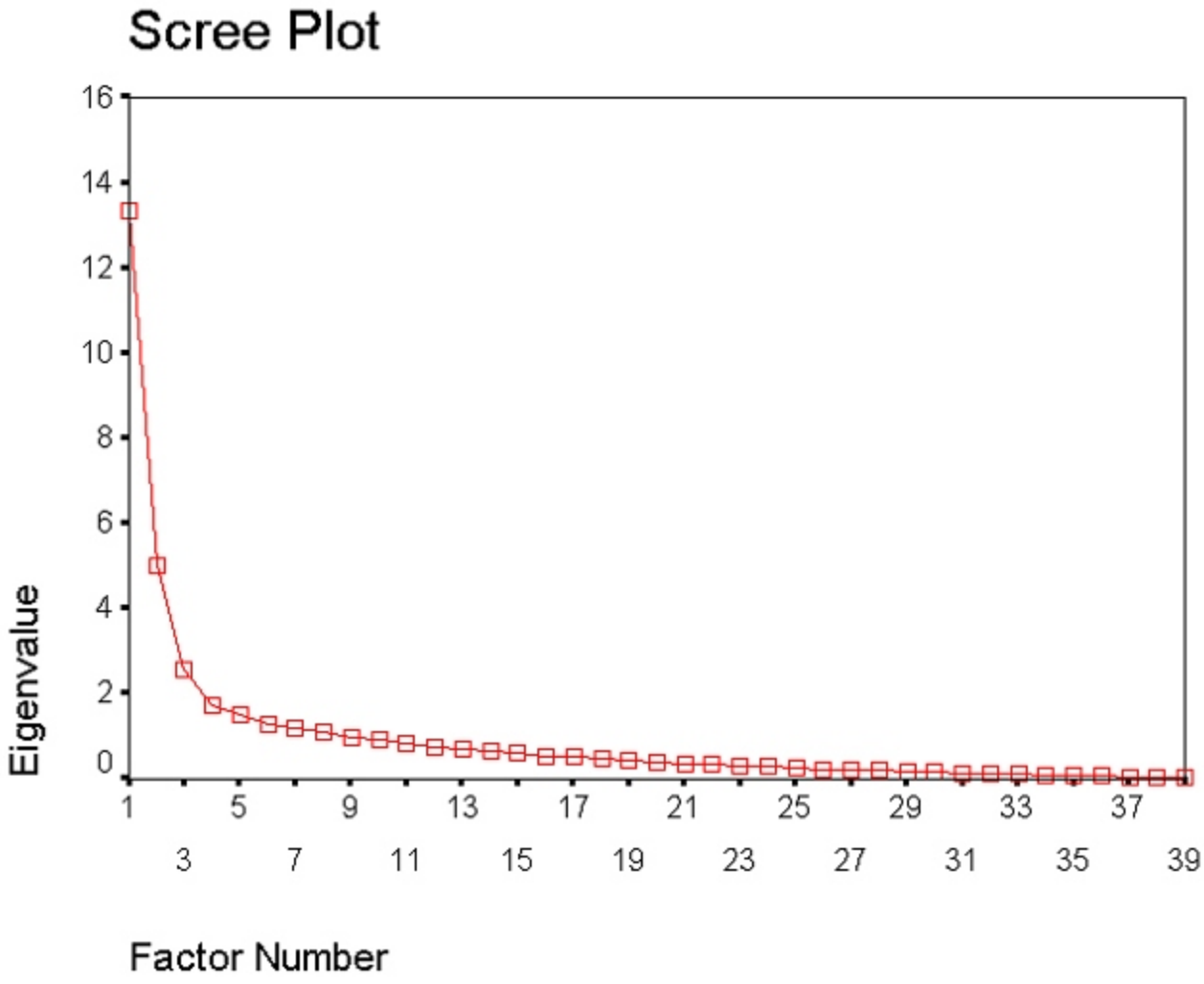

Figure 5. Scree Plot.

structure items, one time item, two physical space items and eight self-regulation items. Three of the 60 items loaded on the fourth and final factor, which accounted for 4.5% of the variance. This factor did not have an apparent theme. Factor four was composed of one structure item, one time item, one physical space item and no self-regulation items.

Group Differences. Exploratory T- tests were conducted to compare the 15 students with disabilities (eight students with LD and seven students with ADD) to students without disabilities on the total scale score and subscale scores. Descriptive statistics for the two groups are listed in Table 23. Comparisons were made of the theoretical and empirical subscales. On the theoretical subscales their was a significant difference between LD and ADD Students and Non Disabled students (Table 24) on the physical space theoretical factor. The same difference was apparent on the empirical subscale, factor 2 which represents physical space. Students with disabilities preformed significantly lower than the normal achieving students on the physical arrangement subscale ($t=3.787$, $p < .001$).

Discussion

The purpose of this pilot study was to determine the content validity and reliability of the AOS-C2. Content validity was established through the evaluation of the AOS-C2 by experts in the field. The experts made comments that the time and structure aspect of organization were similar and might need to be collapsed. Experts reported that the items of the scale adequately covered the construct of organization.

The total scale reliability was .94. Subscale reliabilities ranged from .78 to .90. Sattler (2001) stated that instruments need to have a reliability of .80 or better for clinical and psychoeducational purposes. Sattler (2001) also stated that subtest with reliabilities

of .70 to .79 are relatively reliable. The AOS-C2's reliability as compared to Sattler's (2001) recommendation is within the acceptable limits. This shows that total and subscale reliability is promising.

An exploratory factor analysis was conducted to examine constructs underlying the scale. The congruence between theoretically- based and empirically-based subcales was not perfect. The factor analysis provides initial evidence of three factors, not four, in measuring the construct of organization. Although I expected four factors, the experts' comments suggested three in that the structure and time constructs might load on the same factor. The preliminary factor analysis supported the experts' view. However, a study with a larger sample size that provides adequate power is needs to be conducted. Therefore no were items deleted. It is tentatively concluded that construct validity was demonstrated, but a larger sample is required to draw a firm conclusion on this matter.

An exploratory T-test showed some evidence of construct validity in the ability of the physical arrangement subtest and factor two to discriminate between students with and without disabilities. This may show initial evidence that indeed students with LD and/or ADD have problems in organization.

This pilot study has several limitations. The greater proportion of females and sophomores in the sample may limit the generalization of findings. The over all sample size and the LD/ADD sample size limits interpretation of results from of the factor analysis and t-Test.

An additional study need to be conducted with a larger sample to further explore the reliability of the instrument. Test-retest reliability needs to be evaluated as well. Additional factor analysis and T-tests need to be conducted to explore further construct

validity of the AOS-C2. Addition identifying information needs to be added to the questionnaire such as where students reside (e.g. home, apartment, or dorm) and place to identify disabilities other that the ones listed. The sample might need to be expanded to include juniors and seniors due to the fact that is no evidence of developmental effects to exclude them.

This study has established the content validity of the AOS-C2 by expert reviewers. The

experts reported that the items of the scale adequately covered the construct of organization. This study has also provided initial evidence of reliability and content validity for the AOS-C2. However, further research need so be conducted to confirm and extend these findings.

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Table 19
Participant Characteristics

Variable		N[a]
Gender		
	Male	9
	Female	91
Classification		
	Freshman	5
	Sophomore	95
Race		
	African American	8
	Asian	9
	Caucasian	68
	Hispanic	5
	Other	10
Group Status		
	Disability	26
	ADD	7
	LD	8
	PHY	4
	Other	6
	Multi	1
	Non Disabled	74

Parental Education	
Father Education	
High School	20
Some College	21
College (Completed)	26
Some Post-Graduate	5
Masters (Completed)	20
Post-Masters	6
Mother Education	
High School	26
Some College	23
College (Completed)	22
Some Post-Graduate	8
Masters (Completed)	18
Post-Masters	3

[a] Since N=100, N's for each cell also represent the percentages.

Table 20

Descriptive Statistics

Variable	N	Mean	SD
Age	99	20.52	4.26
SAT[a]	72	1184	115.59
College GPA[a]	90	3.19	.49

[a] Scores based on participants' self reports.

Table 21

Reliability

Scale	Original	Deleted Item
Total Scale	.9406	.9416
Subscales		
Structure	.9049	.9066
Time	.7704	.8270
Physical Arrangement	.8903	.8941
Self-reflection	.7334	.7768

Table 22

Factor Structure Loadings

Item	1	2	3	4	Mean	SD
SO1	.101	.002	.324	-.125	3.29	.87
SO2	**.741**	.004	.009	-.001	3.78	1.33
SO3	.344	-.285	.004	-.362	3.41	.87
SO4	**.555**	-.005	.361	-.171	3.01	1.19
PSO5	**.504**	.422	.316	.006	3.90	1.01
SO6	.411	-.220	.263	**-.454**	2.89	1.04
PSO7	.274	**.560**	-.005	.310	3.44	.95
TO8	**.527**	.449	.151	.004	2.81	1.04
TO9	.004	**.540**	.003	-.006	3.27	1.07
SO10	**.568**	.398	.301	-.182	3.01	1.03
PSO11	.005	**.514**	.514	.285	3.75	1.05
SO12	**.506**	.146	.361	-.002	3.83	.99
SRO13	.196	-.002	**.627**	.009	2.51	1.08
PSO14	.302	**.639**	.412	-.007	3.56	.92
SO15	**.746**	.001	.167	-.009	3.36	1.29
SRO16	.380	-.115	**.591**	.174	3.06	1.01
TO17	**.708**	.101	.330	-.005	3.39	.94
SO18	**.700**	.005	.298	.006	3.23	1.03
TO19	.006	**.598**	.007	.001	3.7	.82
PSO20	.139	**.609**	.003	.357	3.22	.82
TO21	**.606**	.258	.003	.205	3.54	.73
TO22	-.175	**-.512**	.130	.001	3.19	1.18
SO23	.185	.003	**.507**	-.180	2.76	.95
TO24	.153	.355	**.402**	-.274	2.77	1.17
PSO25	**.416**	.112	.268	-.176	3.05	1.32
SR026	.008	-.142	-.006	**.352**	3.61	.96
PSO27	**.573**	.325	.357	.003	3.47	1.06

TO28	**.397**	.326	-.140	.182	3.56	1.07
PSO29	.362	**.702**	.160	.007	3.65	1.11
PSO30	.417	**.595**	.261	.004	3.60	1.23
SO31	.496	.004	**.588**	.001	2.77	.95
SO32	**.498**	.234	.479	-.006	2.65	.96
SRO33	-.001	.251	**.686**	-.006	2.40	1.04
SRO34	-.006	-.137	**.702**	.109	2.84	1.07
TO35	**.745**	.145	.137	.007	3.75	1.39
TO36	**.663**	.118	.280	-.004	3.45	.93
PSO37	.163	**.593**	.004	.532	4.09	.87
TO38	-.001	**.623**	-.255	.001	3.85	1.14
SRO39	-.009	.209	-.274	.187	3.51	.99
SO40	.254	.382	.314	-.177	3.38	.98
TO41	.439	-.125	.177	**-.573**	2.96	.95
SRO42	.215	.002	**.711**	-.008	3.09	.90
PSO43	.192	**.697**	.003	.005	3.28	1.15
SO44	.005	-.209	.271	.003	2.70	1.16
SRO45	.240	.006	**.506**	-.008	3.30	.90
TO46	-.007	**.673**	-.121	-.168	4.14	.94
SO47	**.581**	.474	.287	-.107	3.90	.93
SRO48	.003	.132	.109	.307	3.99	.88
TO49	**.535**	.322	-.105	.132	3.39	.96
SRO50	.291	.127	.274	-.227	3.48	.78
SR051	.115	.155	.007	-.280	2.97	.83
SO52	**.632**	.009	.363	-.171	3.57	1.12
TO53	.268	.304	-.174	.151	3.4	1.12
SR054	.005	.392	.317	-.206	2.96	1.12
PSO55	.172	.146	-.001	**.678**	4.44	.84
SR056	.324	-.004	**.620**	.001	2.96	.96
PS057	.431	.281	**.489**	.006	3.26	1.36

SO58	**.713**	.283	.371	-.006	3.04	1.22
TO59	**.707**	.008	.222	.002	3.66	1.44
SR060	.317	-.002	**.696**	.005	3.05	1.14

Table 23

Group Descriptive Statistics

	LD/ ADD (SD)	Non-Disabled (SD)
Total	184.27 (35.31)	197.80 (26.24)
SubScale		
Structure	54.27 (16.39)	54.05 (9.16)
Time	51.87 (2.3)	55.01 (7.62)
Physical Space	39.20 (7.57)	47.53 (8.66)
Self-reflection	39.33 (8.08)	41.57 (5.91)
Factor 1	69.47 (21.20)	71.41 (14.15)
Factor 2	38.20 (7.53)	47.74 (6.70)
Factor 3	38.47 (12.05)	39.70 (8.07)
Factor 4	10.80 (2.65)	10.24 (1.59)

Table 24

Group Differences between LD / ADHD and students without disabilities - T-Tests

Scale		t	df	Sig	Mean Diff
Total		1.713	87	.09	13.53
	Subscale				
	Structure	-.247	87	.80	-.75
	Time	1.418	87	-.16	3.15
	Physical Space	3.461	87	.001*	8.33
	Self-Reflection	1.25	87	.214	2.23
	Factor 1	.442	87	.668	1.94
	Factor 2	4.925	87	.000*	9.54
	Factor 3	.494	87	.623	1.24
	Factor 4	-1.088	87	.280	-.56

* $p < .01$

Appendix L

Items are keyed to constructs in definition:

S = Structure
T = Time
PS = Physical Space
SR = Self-Reflection

Adapted Question from the Child Organization Scale (COS)

2. When I can't find something I need, I get upset.* (PS)

3. After I use something I put it back right away where it belongs. (PS)

4. I show up on time for class or appointments. (T)

5. I follow the plans I make to get assignments completed. (T)

6. My study area is messy.* (PS)

9. I often do not fully consider what I say before I speak. * (S)

10. I don't realize that I have forgotten something until I'm already in class. * (PS)

12. I have trouble remembering where I put things that I need everyday (e.g. keys, student ID, etc.).* (PS)

13. I make plans for what I'm going to do between classes or during free time. (S)

14. I have trouble locating my book and course materials when I need them.* (PS)

15. I make plans for what I am going to do after class. (S)

20. I have difficulty getting to classes or appointments on time. * (T)

22. I start projects, but I have a hard time finishing them. * (T)

24. My personal belongings (e.g. clothes, living space) are neat and organized. (PS)

25. I do my assignments but can't find them when they are due. * (PS)

27. I have a system for filing my assignments so I can find them quickly. (PS)

29. I am one of the first people to be at a meeting place with friends. (T)

34. I put my books and course materials in the same place when I return home from class. (PS)

35. I lose things. * (PS)

37. I have a plan for deciding which assignment to do first. (S)

39. When I have several things to do in a day, I make a lists or put notes around. (S)

40. I forget to do daily living tasks. (e.g.: keeping appointments, meeting social obligations, paying bills) .* (T)

42. Other people put things where I can't find them. * (PS)

43. Other people lose my things. * (PS)

Adult Organization Scale (AOS)

1. I have a specific day each week on which I routinely perform particular tasks or chores. (S)

7. I am a well organized person. (PS)

11. If I have several tasks/chores to complete and very little time in which to do them I usually mentally prioritize (or order) them before starting on the first task/chore. (A)

17. After I have completed several tasks/chores, I feel that I have completed them in the least amount of time possible. (T)

18. If I have several tasks/chores to complete and very little time in which to do them I usually give myself a time limit for each task before starting on the first task/chore. (T)

23. When I am given several tasks or chores to complete within a day, I like to make a list of the order in which I will perform them. (S)

26. If I have several tasks/chores to complete and very little time in which to do them I usually make a list of the order in which to perform them before starting on the first task /chore. (S)

28. I have specific places for most of the objects in my home so that I can find them immediately. (PS)

30. After I use a tool (e.g. pencil, stapler, kitchen utensil) I return it to its proper place right
away. (PS)

32. When I have several ideas I have difficulty communicating them in a way that makes sense to others. * (S)

38. When thinking about performing a new task/chore, I try to think ahead about possible
problems. (S)

41. I have difficulty organizing my thoughts in a logical order. * (S)

Author Developed

8. I have an area specifically for study. (PS)

16. I make long term plans to accomplish assignments. (S)

19. I schedule and plan study time for tests. (S)

21. I ask advice from other classmates about time needed to complete assignments. (S)

31. I do not schedule enough time to complete assignments or activities. * (T)

33. I use a daily calender. (T)

36. I have a plan of action to accomplish activities at the library or lab. (S)

44. I ask advice from others about how they approach an assignment. (T)

45. When I have difficulty completing tasks I think about how I can perform them more effectivity. (SR)

46. When I am completing a task, I monitor the amount of time that I take to complete the
activity. (SR)

47. When I plan a task/activity, I think about how I performed the last time I did something
similar. (SR)

48. When I am doing work on an activity, I change what I am doing. (SR)

49. I evaluate how successful my actions were when an activities is completed. (SR)

50. I often reflect on my thinking when a task / project has ended. (SR)

51. When I am doing poorly on a task, I try to get finished quickly.* (SR)

52. I make judgements on wether or not to attempt a task/project bases on previous experience. (SR)

53. I evaluate the environment in which I complete a task/project to make judgements on how to
attempt similar activities in the future. (SR)

54. When I fail to complete a task/project on time, I attribute it to the process I used to completed the task/project. (SR)

55. When I fail to complete a task/project on time, I attribute it to ability.* (SR)

* reverse coded; a high score is equivalent to always

Appendix M

Please circle:

Classification: Freshman
Sophomore

Gender: Female
Male

Race: African American
American Indian
Asian
Caucasian
Hispanic
Other

Do you have documented disability:
Yes / No

Age: _____

If yes, circle all that apply:
attention deficit disorder
attention deficit hyperactivity disorder
learning disability
physical disability
other

College / High School GPA:
_____

SAT / ACT:
_____

Major:
_____

Mother's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post graduate
Masters (completed)
Post - Masters

Fathers highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post graduate
Masters (completed)
Post - Masters

	Never	Hardly ever	Some-times	Usually	Always
1. I have a specific day each week on which I routinely perform particular tasks or chores.	1	2	3	4	5
2. When I can't find something I need, I get upset.	1	2	3	4	5
3. After I use something I put it back right away where it belongs.	1	2	3	4	5
4. I show up on time for class or appointments.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
5. I follow the plans I make to get assignments completed.	1	2	3	4	5
6. My study area is messy.	1	2	3	4	5
7. I am a well organized person.	1	2	3	4	5
8. I have an area specifically set aside for study.	1	2	3	4	5
9. I often do not fully consider what I say before I speak.	1	2	3	4	5
10. I don't realize that I have forgotten something until I'm already in class.	1	2	3	4	5
11. If I have several tasks/chores to complete and very little time in which to do them I usually mentally prioritize (or order) them before starting on the first task/chore.	1	2	3	4	5
12. I have trouble remembering where I put things that I need everyday (e.g. keys, student ID, etc.).	1	2	3	4	5
13. I make plans for what I'm going to do between classes or during free time.	1	2	3	4	5
14. I have trouble locating my book and course materials when I need them.	1	2	3	4	5
15. I make plans for what I am going to do after class.	1	2	3	4	5
16. I make long term plans to accomplish assignments.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
17. After I have completed several tasks/chores, I feel that I have completed them in the least amount of time possible.	1	2	3	4	5
18. If I have several tasks/chores to complete and very little time in which to do them I usually give myself a time limit for each task before starting on the first task/chore.	1	2	3	4	5
19. I schedule and plan study time for tests.	1	2	3	4	5
20. I have difficulty getting to classes or appointments on time.	1	2	3	4	5
21. I ask advice from other classmates about how much time they needed to complete assignments.	1	2	3	4	5
22. I start projects, but I have a hard time finishing them.	1	2	3	4	5
23. When I am given several tasks or chores to complete within a day, I like to make a list of the order in which I will perform them.	1	2	3	4	5
24. My personal belongings (e.g. clothes, living space) are neat and organized.	1	2	3	4	5
25. I do my assignments but can't find them when they are due.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
26. If I have several tasks/chores to complete and little time in which to do them I usually make a list of the order in which to perform them before starting on the first task /chore.	1	2	3	4	5
27. I have a system for filing my assignments so I can find them quickly.	1	2	3	4	5
28. I have specific places for most of the objects in my home so that I can find them immediately.	1	2	3	4	5
29. I am one of the first to arrive at a meeting place with friends.	1	2	3	4	5
30. After I use a tool (e.g., pencil, stapler, kitchen utensil) I return it to its proper place right away.	1	2	3	4	5
31. I do not schedule enough time to complete assignments or activities.	1	2	3	4	5
32. When I have several ideas I have difficulty communicating them in a way that makes sense to others.	1	2	3	4	5
33. I use a daily calender.	1	2	3	4	5
34. I put my books and course materials in the same place when I return home from class.	1	2	3	4	5
35. I lose things.	1	2	3	4	5
36. I have a plan of action to accomplish activities at the library or lab.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
37. I have a plan for deciding which assignment to do first.	1	2	3	4	5
38. When thinking about performing a new task/chore, I try to think ahead about possible problems.	1	2	3	4	5
39. When I have several things to do in a day, I make lists or put notes around.	1	2	3	4	5
40. I forget to do daily living tasks. (e.g., keeping appointments, meeting social obligations, paying bills)	1	2	3	4	5
41. I have difficulty organizing my thoughts in a logical order.	1	2	3	4	5
42. Other people put things where I can't find them.	1	2	3	4	5
43. Other people lose my things.	1	2	3	4	5
44. I ask advice from others about how they approach an assignment.	1	2	3	4	5
45. When I have difficulty completing tasks I think about how I can perform them more effectivity.	1	2	3	4	5
46. When I am completing a task, I monitor the amount of time that I take to complete the activity.	1	2	3	4	5
47. When I plan a task/activity, I think about how I performed the last time I did something similar.	1	2	3	4	5
48. When I am doing work on an activity, I change what I am doing.	1	2	3	4	5

	Never	Hardly ever	Some-times	Usually	Always
49. I evaluate how successful my actions were when an activities is completed.	1	2	3	4	5
50. I often reflect on my thinking when a task / project has ended.	1	2	3	4	5
51. When I am doing poorly on a task, I try to get finished quickly.	1	2	3	4	5
52. I make judgements on wether or not to attempt a task/project bases on previous experience.	1	2	3	4	5
53. I evaluate the environment in which I complete a task/project to make judgements on how to attempt similar activities in the future.	1	2	3	4	5
54. When I fail to complete a task/project on time, I attribute it to the process I used to completed the task/project.	1	2	3	4	5
55. When I fail to complete a task/project on time, I attribute it to ability.	1	2	3	4	5

Appendix N

Deborah Butler

Donald Deshler

Karen Harris

Ellen Hart

Bob Reid

Paul Pintrich

Michael Pressley

Appendix O

Adult Organizational Scale - College - Version 2 (AOS-C2)

Please circle:

Classification: Freshman
Sophomore

Gender: Female
Male

Race: African American
American Indian
Asian
Caucasian
Hispanic
Other

Do you have documented disability:
Yes / No

Age: _____

If yes, circle all that apply:
attention deficit disorder
attention deficit hyperactivity disorder
learning disability
physical disability
other

College / High School GPA: _____

SAT / ACT: _____

Major: _____

Mother's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post-graduate
Masters (completed)
Post - Masters

Father's highest level of education:
Less than 12 years
High school (completed)
Some college
College (completed)
Some post-graduate
Masters (completed)
Post - Masters

		Never	Hardly ever	Some-times	Usually	Always
1	After developing a plan to accomplish an assignment, I change it based on possible problems I might encounter.	1	2	3	4	5
2	When I have several things to do in a day, I make a list or put notes around.	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
3	I find it useful to talk with others to decide how to complete an assignment.	1	2	3	4	5
4	I develop a plan of action to accomplish activities at the library or lab.	1	2	3	4	5
5	I have specific places for most of the objects in my home so that I can find them immediately.	1	2	3	4	5
6	I ask advice from other classmates about time needed to complete assignments	1	2	3	4	5
7	I don't realize that I have forgotten something until I'm already in class.	1	2	3	4	5
8	I leave things to the last minute.	1	2	3	4	5
9	I am one of the first people to be at a meeting place with friends.	1	2	3	4	5
10	When faced with a deadline, I break down the assignment into parts.	1	2	3	4	5
11	I have trouble remembering where I put things that I need everyday (e.g. pencils, school supplies, books, notebooks, etc.).	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
12	If I have assignments/papers to complete and very little time in which to do them, I mentally prioritize (or order) them before starting on the first task.	1	2	3	4	5
13	I reflect on my plan of action after I complete a project	1	2	3	4	5
14	After I use something, I put it back where it belongs.	1	2	3	4	5
15	When I am given several assignments to complete in a day, I like to make a list of the order in which I will perform them.	1	2	3	4	5
16	I evaluate the success of my actions when an activity is completed.	1	2	3	4	5
17	I follow the plans I make to get assignments completed.	1	2	3	4	5
18	When I have some free time, I make plans to accomplish assignments.	1	2	3	4	5
19	I am able to complete an assignment in a reasonable amount of time.	1	2	3	4	5
20	I lose things.	1	2	3	4	5
21	I have difficulty following through on the plans I make.	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
22	When I fail to complete a project on time, it is because I do not give myself enough time.	1	2	3	4	5
23	When thinking about performing a new task, I try to identify possible problems before I begin.	1	2	3	4	5
24	If I have several tasks to complete and very little time in which to do them, I usually give myself a time limit for each task before beginning my work.	1	2	3	4	5
25	I have an area specifically for study.	1	2	3	4	5
26	When an assignment or test is difficult, I try to get finished quickly.	1	2	3	4	5
27	After I use a tool (e.g. pencil, stapler) I return it to its proper place right away.	1	2	3	4	5
28	I start projects, but I have a hard time finishing them.	1	2	3	4	5
29	I am a well organized person.	1	2	3	4	5
30	I put my books and course materials in the same place when I return home from class.	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
31	After developing a plan to complete an assignment, I examine my plan and anticipate possible problems.	1	2	3	4	5
32	I make a step - by - step plan to accomplish an assignment.	1	2	3	4	5
33	I evaluate how successfully my time was spent when I finish a project.	1	2	3	4	5
34	When I finish a project, I think about how I could do it better next time.	1	2	3	4	5
35	I use a daily calender to keep track of assignments.	1	2	3	4	5
36	Once I make my plan, I follow it.	1	2	3	4	5
37	I have trouble locating my book and course materials when I need them.	1	2	3	4	5
38	I have difficulty getting to classes on time.	1	2	3	4	5
39	When I fail to complete a project on time, it is because I used a faulty plan.	1	2	3	4	5
40	I make plans for what I am going to do after class.	1	2	3	4	5
41	I ask advice from others about how they approach an assignment.	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
42	When I have difficulty completing tasks, I think about how I can perform them more effectively.	1	2	3	4	5
43	My study area is cluttered.	1	2	3	4	5
44	For each class, I have a specific day each week that I use to prepare for that class.	1	2	3	4	5
45	When I plan a task, I think about how I accomplished it the last time I did something similar.	1	2	3	4	5
46	I show up on time for class.	1	2	3	4	5
47	I am able to prioritize my assignments.	1	2	3	4	5
48	When I fail to complete a project on time, it is because of my poor ability	1	2	3	4	5
49	I do not schedule enough time to complete assignments or activities.	1	2	3	4	5
50	When I am doing work on an assignment, I change my approach if I am not meeting my goals.	1	2	3	4	5
51	I make judgements on whether or not to attempt a project based on previous experience.	1	2	3	4	5

		Never	Hardly ever	Some-times	Usually	Always
52	I plan and schedule study time for tests.	1	2	3	4	5
53	I do not get projects started on time.	1	2	3	4	5
54	When I am completing a task, I monitor the amount of time that I take to complete it.	1	2	3	4	5
55	I do my assignments but can't find them when they are due.	1	2	3	4	5
56	When I am doing work on an assignment, I monitor whether or not I am reaching my goal.	1	2	3	4	5
57	I have a system for filing my assignments so I can find them quickly. (PS)	1	2	3	4	5
58	I make long term plans to accomplish assignments.	1	2	3	4	5
59	I use a calender or planner to schedule time to complete tasks.	1	2	3	4	5
60	I evaluate if I met my goals when an activity is completed.	1	2	3	4	5

Appendix P

Standardized directions for the AOS-C2.

Thank you for the opportunity to talk with you today. The following survey is a research project to develop a questionnaire to measure the organizational ability and skills of freshman and sophomore college students. Please do not put your name on this survey. The information you provide on this survey will be held in strict confidence. No names will be released in connection with the study. Your participation is voluntary and will have no affect on your grade in this class.

Please fill out the descriptive information at the top of the survey by circling the word that most closely describes you. "Classification" refers to how many hours you have completed which is your classification listing the registrars office, not the number of years you have been attending college. If you are a freshman, please report your grade point average from high school and circle "High School" above GPA. Please circle which ever test applies to you – SAT or ACT – and report the score.

Please be honest when completing the survey. Any answer to this survey does not reflects upon your grades, personality, or ability as a student. When the survey refers to "home," this is wherever you live. This may be a dorm room, apartment, or home. Please make every effort to answer each and every question. Are there any questions? Thank you, again, for the completion of this survey. Your assistance is is greatly appreciated.

Appendix Q

Items deleted based on expert opinion

9. I often do not fully consider what I say before I speak.

41. I have difficulty organizing my thoughts in a logical order.

32. When I have several ideas I have difficulty communicating them in a way that makes sense to others.

42. Other people put things where I can't find them.

43. Other people lose my things.

Item deleted based on change of focus:

24. My personal belongings (e.g. clothes, living space) are neat and organized.

Appendix R

Added Items:

When faced with a deadline, I often break down the assignment into parts.

I make a step-by-step plan to accomplish an assignment.

I find it useful to talk with others to decide how to complete an assignment.

After developing a plan to accomplish a assignment, I changed it based on possible problems I might encounter.

After developing a plan to complete an assignment, I examine my plan and anticipated possible problems.

I use a calender or planner to schedule time to complete tasks.

I do not get projects started on time.

I leave things to the last minute.

I have difficulty following through on the plans I make.

Once I make my plan, I follow it.

When I fail to complete a project on time, it's because I do not give myself enough time.

When I am going work on an assignment, I change my approach if I am not meeting my goals.

I evaluate how successfully my time was spent when I finish a project.

I evaluate if my goals when an activity is completed

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